RIVER TERRACE 2.0

CONCEPT PLAN

OCTOBER 2021

TIGARD®

ACKNOWLEDGMENTS

We acknowledge that the areas we are planning for are the traditional lands of the Tualatin Kalapuya. They and their descendants are the original caretakers of this land. We regret the displacement, genocide, and forced assimilation that still impacts many Indigenous families today and recognize that injustices visited upon Indigenous peoples of this region have yet to be properly rectified.

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TABLE OF CONTENTS

FIGURES

TABLES

EXECUTIVE SUMMARY

Introduction

The River Terrace 2.0 Concept Plan is the first step in planning for a new Tigard neighborhood. This plan will serve as the guide for future planning work in the River Terrace West and South urban reserve areas, establishing a vision for how needed housing and supportive land uses, as well as supportive elements such as roads, public utilities, parks and trails, stormwater management, and protection of natural areas, can be fully integrated into a complete and cohesive community.

One of the primary goals of this work is to help the City and region prepare lands for development to ensure there is an adequate supply of housing that meets the needs of all residents. The city, region, and state of Oregon are all experiencing population growth mixed with decreasing housing production, resulting in a deep and ongoing housing shortage that is entering its second decade. These trends have been key drivers of displacement for low-income and minority households. Equitable housing opportunity is a critical element in planning for a just, healthy, and sustainable future for communities.

Locally, a 2021 housing needs analysis (HNA) identified a need for more than 3,000 new housing units in Tigard through 2040. A significant portion (about 40 percent) of those homes need to be affordable to households making 80 percent or less of the median family income to meet projected community need. The River Terrace 2.0 concept plan provides a vision for a neighborhood that will provide 3,000 to 4,500 units of new housing, with an emphasis on creating opportunities for a wide range of housing types, sizes, and prices.

Project Context

Located at the south and west boundaries of Tigard's existing City limits, River Terrace 2.0 currently consists of agricultural land and some homes on relatively large lots. River Terrace 2.0 is bounded to the north by SW Scholls Ferry Road and the South Cooper Mountain community of Beaverton. To the west lies designated rural reserve land and undesignated land within Washington County. The southern boundary of River Terrace 2.0 is SW Beef Bend Road and the new Kingston Terrace neighborhood. The eastern edge of the plan area is adjacent to the original River Terrace community of Tigard.

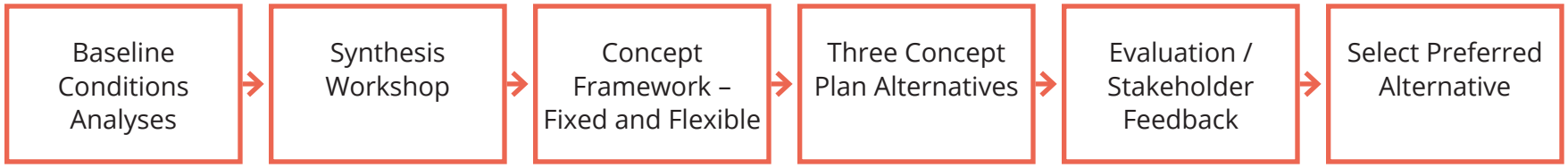
Within River Terrace 2.0 are a variety of natural resource areas comprised of wetlands, riparian corridors, significant tree groves, streams, and habitat conversation areas. The dominant landforms are shaped by drainage tributaries that are part of the Tualatin River system. Slopes along the drainages tend to be steep; outside of drainages, slopes are more gradual. There are high points in the study area where views of Mt. Hood can be seen, particularly in River Terrace South.

The area within River Terrace 2.0 is not currently served by public utilities (water, sanitary sewer, and stormwater). There is public infrastructure directly adjacent to the study area, primarily to the east and north. Streets in the study area are mostly local streets and private driveways; major arterials (SW Scholls Ferry, SW Roy Rogers, and SW Beef Bend) run along the edges of River Terrace 2.0 and the local street network to the north and east is either built out, or planned and expected to be built soon.

Adjacent to the River Terrace 2.0 study area, the existing trail network and parks facilities are just beginning to be developed. Some segments of the River Terrace Trail are built, but many trail alignments are still being planned. The existing parks are also relatively new, developed along with neighborhoods of the River Terrace 1.0 area.

Concept Planning Process

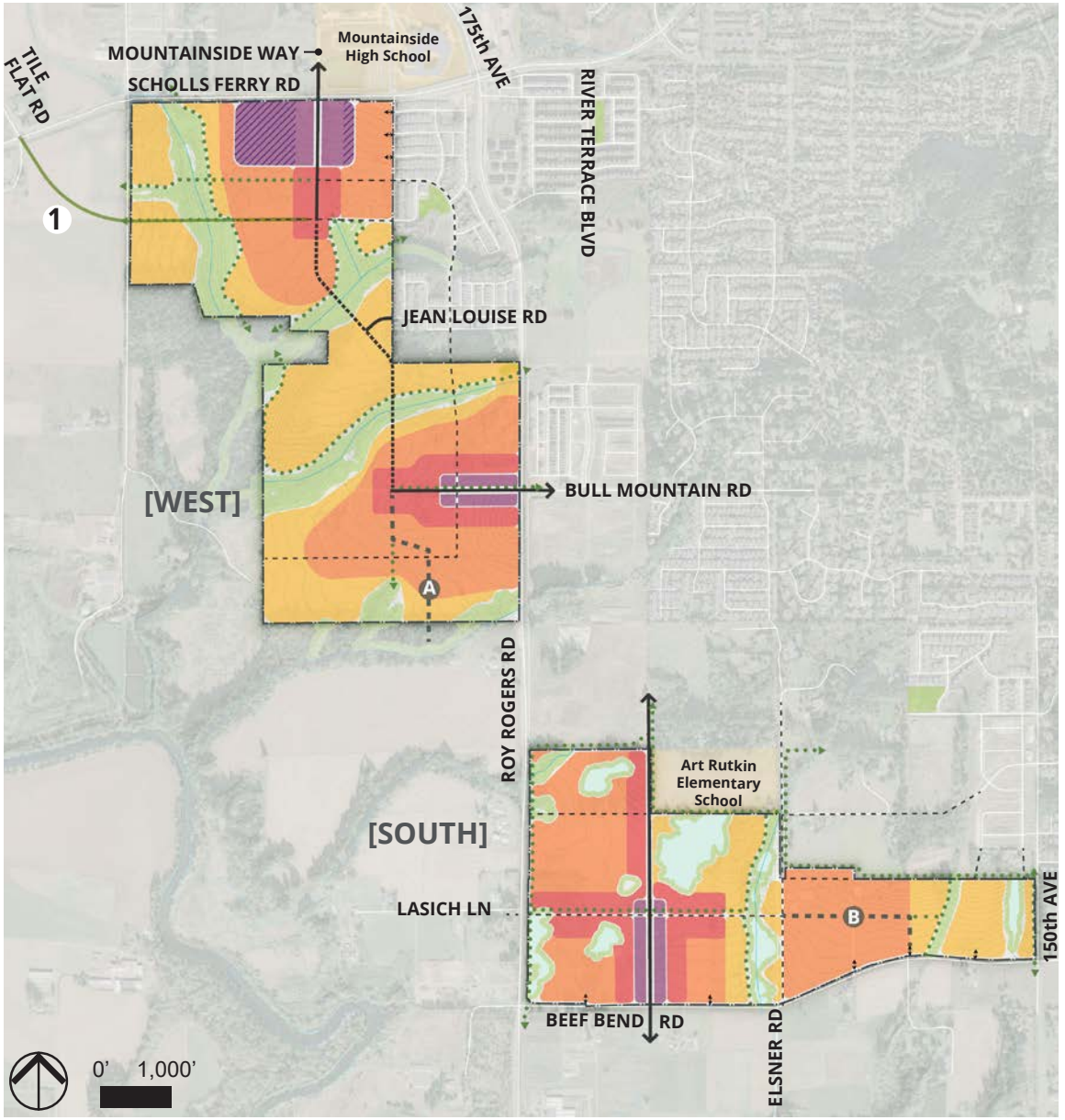
The River Terrace 2.0 Concept Plan was developed iteratively, with input from a variety of stakeholders, advisory groups, residents, technical consultants, and decision-makers at each step in the process.



Once baseline conditions were determined and synthesized, three concept plan alternatives were developed to explore options for land use and infrastructure patterns and connections. The alternatives were evaluated against Guiding Principles that were established at the beginning of the project. Alternatives were also reviewed by a variety of stakeholders and community members to help the project team understand preferences. Themes that emerged from the alternatives evaluation included diverse housing options, smaller-scale commercial nodes within neighborhoods, walkability and access to parks and trails, safe and comfortable street networks, and opportunities for employment. Urban design responses to those community desires were woven into the final concept.

River Terrace 2.0 Concept Plan

The River Terrace 2.0 Concept Plan offers opportunities for a wide variety of household types and sizes, along with places to shop, work and recreate – all within walkable, well-connected neighborhoods.



Legend

- River Terrace 2.0 Project Area
- Employment Area
- Commercial / Neighborhood Node
- Main Street
- Even Mix
- Feathered Edge
- Collector Road
- Street / Pedestrian Connection
- Minor Street Connection
- Mountainside Way Future Study Area
- Beef Bend Road Future Study Area
- Community Connection
- Trail Network
- Stream
- Wetlands
- Vegetated Corridor
- Park (Outside Project Area)
- School (Outside Project Area)

1 Tile Flat, Future Study Area – Framework B, See Transportation Section

Housing. Three distinct housing typologies, or patterns, are envisioned for the residential areas of River Terrace 2.0, each of which is intended to respond to surrounding land uses and context. While the housing patterns differ in building form and intensity, there are housing types that are common to all three: single detached and cottage units, accessory dwelling units, courtyard units, quads, and rowhouses. The Main Street typology is designed to be located along a main street corridor and is envisioned to have taller rowhouses and other housing types oriented toward the main street. The Even Mix type is intended to be located in the middle, between the neighborhood edges and the main street corridors, and includes a wide variety of housing types from block to block. The Feathered Edge typology is designed to respond to the edges of neighborhoods where they intersect with natural resource and open space areas. All typologies are intended to provide a mix of housing types and sizes and provide opportunities for affordable options throughout.

Commercial/employment. Several commercial nodes are planned, two in River Terrace West and one in River Terrace South. All commercial nodes are envisioned as main street corridors, with small-scale commercial retail and office spaces intended to serve the surrounding neighborhoods. The main street corridors are internal to the neighborhoods but maintain strong connections to the arterial edges to support visibility as well as transit access. The northern-most main street corridor in River Terrace West is surrounded by a larger (approximately 10 acres) employment area. The main street corridor in River Terrace South is intended to reflect and complement the planned town center in Kingston Terrace to the south, across Beef Bend Road.

Street network. The planned street network for River Terrace 2.0 is designed to be highly connected and provide options for internal and external connections. A primary north-south collector street is planned through River Terrace West, providing connections from Scholls Ferry Road down to Bull Mountain Road and further south. That collector may be an extension of SW Mountainside Way or SW Tile Flat Road – both options are explored as part of the Concept Plan. Through River Terrace South, the primary north-south collector will be an extension of River Terrace Boulevard through the study area and south to Beef Bend Road and into Kingston Terrace. In both areas, logical extensions of the existing adjacent street network are planned.

Trails and Parks. Part of the transportation system includes planned trails throughout River Terrace West and South. Trails are intended to provide recreation as well as transportation/commuting opportunities; they will provide connections between main street corridors, neighborhoods, parks and open spaces, and adjacent existing or planned regional trails (River Terrace Trail, for example). The plan calls for a number of community and neighborhood parks to meet Tigard's level of service standard and ensure broad distribution of parks throughout the study area. Two community parks, four neighborhood parks, and four linear parks are planned for River Terrace West. In River Terrace South, one community park, two neighborhood parks and two linear parks are expected. The Concept Plan does not identify exact sizes or locations for those parks; that level of detail will be explored in the next phase of planning for River Terrace 2.0.

Public Utilities. Sanitary sewer and water service will be extended into River Terrace 2.0 to serve new development, primarily from existing infrastructure to the north and east. Some larger projects will be required, including new sewer pump stations, a water reservoir, and large diameter pipelines. Stormwater management is envisioned to be through a combination of large, regional facilities and smaller-scale low-impact development approaches. Stormwater management in this area will follow the same standards used for River Terrace 1.0, which is generally a more stringent standard than the baseline requirements per Clean Water Services. Regional facilities will be co-located with established wetlands where appropriate and will be designed to also serve as community amenities.

Implementation. The total cost for planned infrastructure needed to serve River Terrace 2.0 is approximately $170 million. The Concept Plan identifies potential funding sources for each infrastructure type, including system development charges (SDCs), supplemental fees, grants, regional sources (Washington County Transportation Development Tax, for example), Clean Water Services regional program for stormwater, and developer contributions. Specific to housing implementation, the Concept Plan identifies a number of strategies that can be used to encourage development of diverse housing types and affordable housing options. Those strategies include tiered SDCs, loan programs, land banking, developer incentives, and others.

Next Steps. Once the River Terrace 2.0 Concept Plan is adopted, the urban reserves will be brought into the urban growth boundary and further planning can occur. In the next phase, the City will prepare a Community Plan that will build from, and refine, the work done as part of this Concept Plan. Similar to the concept planning work, the Community Plan will engage a broad and inclusive group of stakeholders and residents to prepare a more detailed guide for future development in this area.

I. PROJECT FOCUS & VISION STATEMENT

Project Focus

This work is focused through two lenses that are centrally linked - equity and climate change. You can consider these lenses as a pair of glasses through which this work is conducted and viewed; they guide the vision of the project. As such, this project seeks to lift up the voices of communities of color, immigrants, and people with low incomes. These communities are among those most affected by the impacts of environmental inequities, climate change, and systemic racism. When we meet the needs of the most vulnerable communities, the health and wellbeing of all community members improves.

Vision Statement

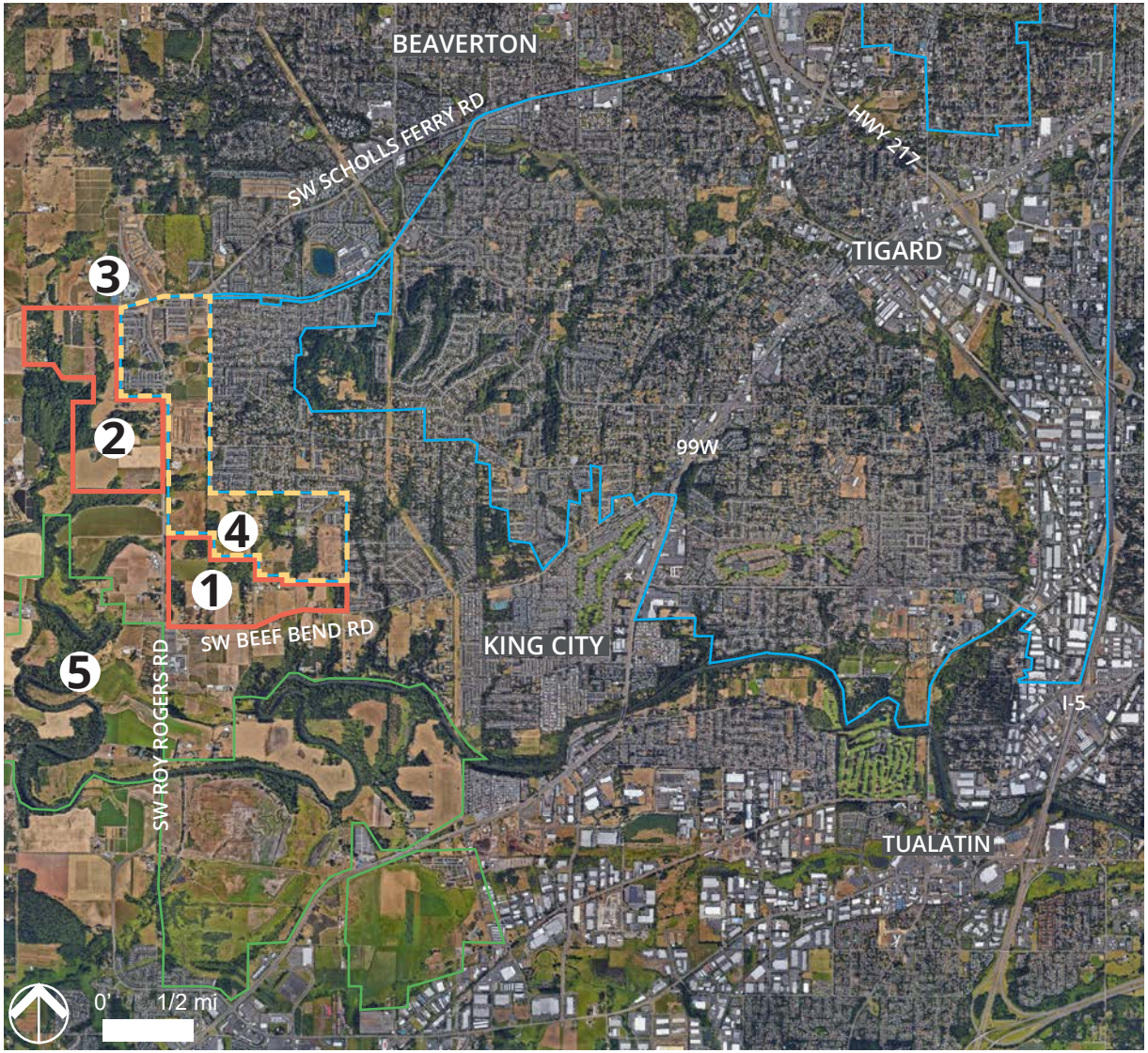
River Terrace 2.0 is a neighborhood for everyone and a complete community. It offers housing opportunities to the full diversity of Tigard's families and households. This community is made complete by providing space for small businesses and a thriving economy, a variety of housing options, and accessible parks and open spaces. The transportation system treats all modes equally, with walking and biking trails throughout the community, a road system that emphasizes safety and regional access, and a development pattern that supports an efficient public transit system. Public spaces and parks offer places for the community to gather. Natural areas are protected and enhanced to emphasize habitats and scenic views. Public utilities are designed to maximize cost-efficiency and long-term fiscal sustainability. The costs of necessary infrastructure are shared in an equitable manner.

II. INTRODUCTION

The River Terrace 2.0 Concept Plan is the first step in planning for a new Tigard community. This plan provides the framework for how future growth and development can occur in the River Terrace West and South urban reserve areas.

River Terrace 2.0 is envisioned as a complete community, one that provides opportunities for housing, employment, parks, and open spaces that are connected by a well-designed multi-modal transportation network. This plan serves as the guide for future planning work in this area, establishing a vision for how land uses, roads, public utilities, opportunities for employment, parks and trails, and natural areas can be fully integrated within River Terrace 2.0.

Vicinity Map



Legend

- River Terrace 2.0 Project Area
- River Terrace 1.0
- Tigard City Boundary
- **1** River Terrace South
- **2** River Terrace West
- **3** Mountainside High School
- **4** Future Art Rutkin Elem. School
- **5** Tualatin River Nat. Wildlife Refuge

Why Do Concept Planning Now?

This plan is intended to help the City and region prepare lands for development to ensure that there is an adequate supply of housing. Underproduction of housing in the wake of the 2008 financial crisis led to a shortage of more than 20,000 units in Oregon. The 2021 State of the Economy Report produced by ECONorthwest and published by the Portland Business Alliance found the largest downturn in housing production since the previous crisis. This is potentially troubling news, as continued population growth mixed with an ongoing housing shortage and a decrease in production will further exacerbate the region's already-severe housing crisis. Together, these trends are key drivers of displacement for low-income and minority households.

This plan will help the City of Tigard set in place a vision to accommodate expected growth while addressing increasing demand for more housing choices, promoting economic opportunity, and providing countervailing measures against displacement. A recent housing survey of Tigard residents revealed that the majority of respondents feel that Tigard needs a greater variety of housing types at more affordable prices. That sentiment is supported by the 2021 Housing Needs Analysis (HNA) prepared for Tigard by Mosaic Community Planning. The HNA identifies a need for more than 3,000 new housing units in the Tigard area.

About 40 percent of those homes should be affordable to households with incomes that are 80 percent or less of the median family income. Further, the HNA notes that **"Data regarding housing needs by race and ethnicity exemplify the intersection between housing affordability and equity in Tigard. Expanded affordable housing options, including opportunities for homeownership, are needed for the city to develop as a community for all."**

Addressing these issues of housing supply, choice, and equity is one of the one of the primary goals for this concept plan. River Terrace 2.0 will provide 3,000 to 4,500 units of new housing, with an emphasis on creating opportunities for a diversity of types, sizes, and prices. Strategies for incorporating affordable housing into the community are an integral part of the plan.

Lastly, this plan also allows the City to think comprehensively about its role within the larger region and how future Tigard neighborhoods, commercial and employment centers, and travel corridors can reflect, complement, and connect with surrounding neighborhoods. Planning and development efforts are occurring all around River Terrace 2.0 - in Beaverton, King City, other parts of Tigard, and Washington County. Planning for this area now will allow for regional solutions and more coordinated and cohesive communities.

Concept Planning Process

In order to consider future growth and development in River Terrace 2.0, the area must first be brought into the urban growth boundary (UGB). This Concept Plan demonstrates that the City has evaluated options for the urbanization of this area and can meet the requirements for inclusion in the UGB. Those requirements are set forth in Title 11 of Metro's Urban Growth Management Functional Plan, which establishes the rules for UGB management.

Once brought into the UGB, the Concept Plan will be used as the basis for a Community Plan, the next phase of work in planning for development in these areas. The Community Plan will further develop and refine the community design, technical analyses, funding plan, and policy strategies that guide development and set in place the Comprehensive Plan map designations, zoning, and development standards that will apply. Land can then be annexed, zoning can be applied, and development can begin. The span between concept planning and ultimate development can take five or more years, depending on the size of the planning area, market forces, and the cost and scale of needed infrastructure improvements.

Collect community ideas for River Terrace 2.0, which will inform the Concept Plan.

The Concept Plan will outline a broad vision for the area. It is the first step in the process for eventual development.

A community plan will further refine the vision developed with the Concept Plan and will provide more specific proposals for future land uses and developments.

Development will occur through land divisions, planned developments and site development review.

Who was involved?

This plan is the product of many minds working together toward a common goal. To successfully plan for a new community, the needs, desires and expectations of all stakeholders must be understood and integrated. From the start, this project was focused on providing multiple venues for people to meaningfully participate throughout the process. The public involvement plan for this project was particularly centered around equity – ensuring broad and inclusive representation, especially for those segments of the population that have historically not been included during these types of planning processes. A full description of the public involvement plan and a summary of public engagement activities and outcomes are provided in Appendices A & B.

One of the major hurdles this project had to overcome was that it was completed entirely within the span of an international pandemic that precluded the types of public gatherings that are so often used in public planning processes. This meant that the project team needed to work proactively with community partners to ensure that accommodations were provided to allow the broadest diversity of stakeholders to participate.

Online Open House Website

Guiding Principles

One of the first steps in the concept planning process was the development of a set of guiding principles to serve as the foundation upon which the concept plan was built. These guiding principles represent the values held by the City of Tigard and its residents; these are the elements that are critical to creating a complete and inclusive community. They are derived directly from, and are intended to carry out, the Project Vision that was developed collaboratively with the Community Advisory Committee.

Neighborhoods & Housing

- Neighborhoods provide a diversity of housing choices that will serve the full range of housing needs for Tigard's current and future residents
- Neighborhoods integrate opportunities for market rate and regulated affordable housing to facilitate home ownership at all income levels
- Neighborhoods are designed to thoughtfully incorporate adjacent natural areas and commercial centers
- Neighborhoods are designed to provide opportunity for an average of twenty households per acre

Neighborhoods Study Sketch

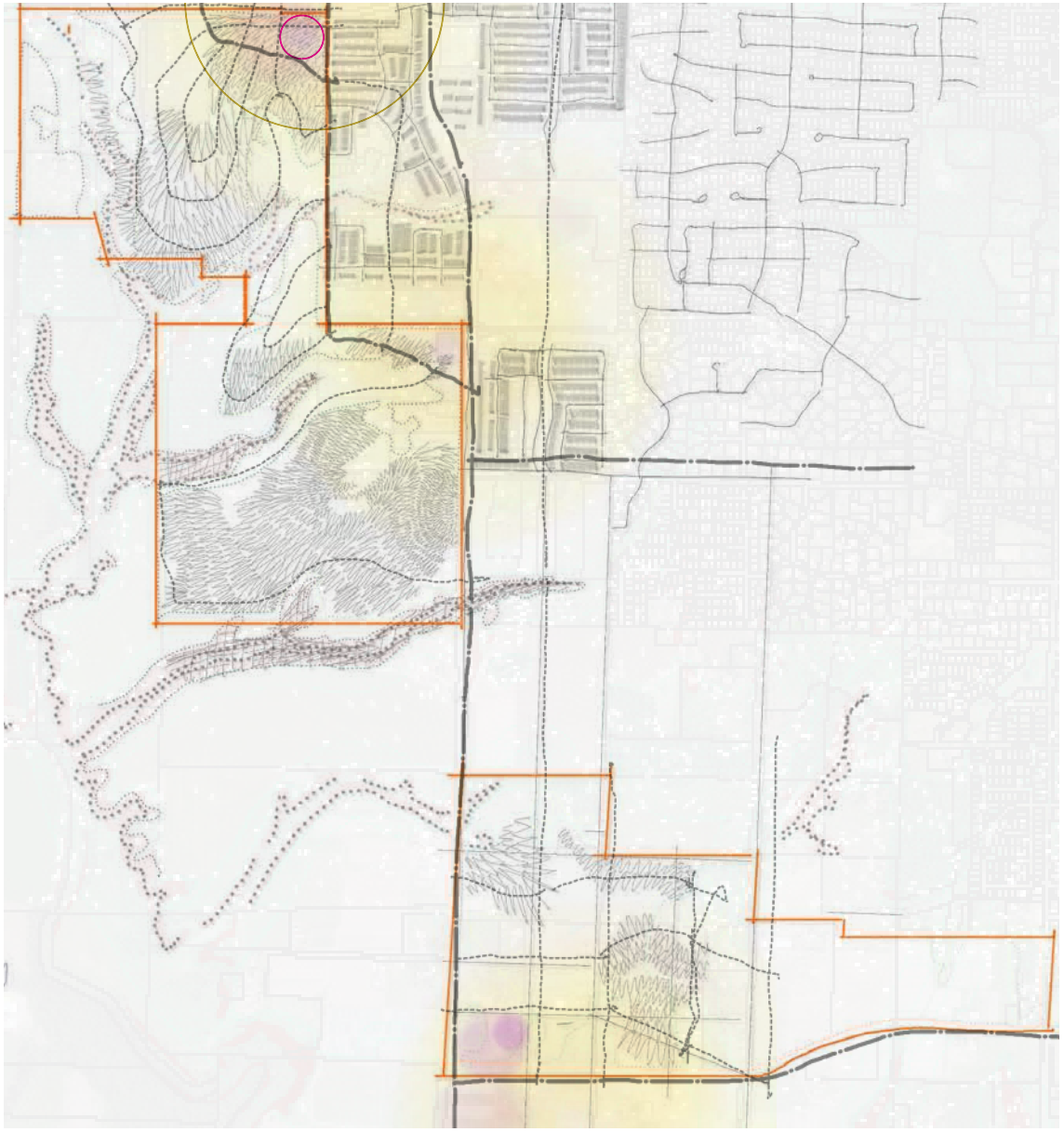
Transportation

- The transportation system emphasizes pedestrian and bicycle connections within the neighborhood and to regional trails
- Streets are designed for safety and to serve all modes of transportation, including vehicles, pedestrians, bicycles, and transit
- The transportation system connects to regional facilities and extends existing streets and trails where feasible and economically viable

Commercial & Employment

- Commercial areas provide opportunities for business and employment to serve River Terrace residents
- Residents can acquire many goods and services to meet their daily needs without having to travel long distances

Commercial Areas Study Sketch



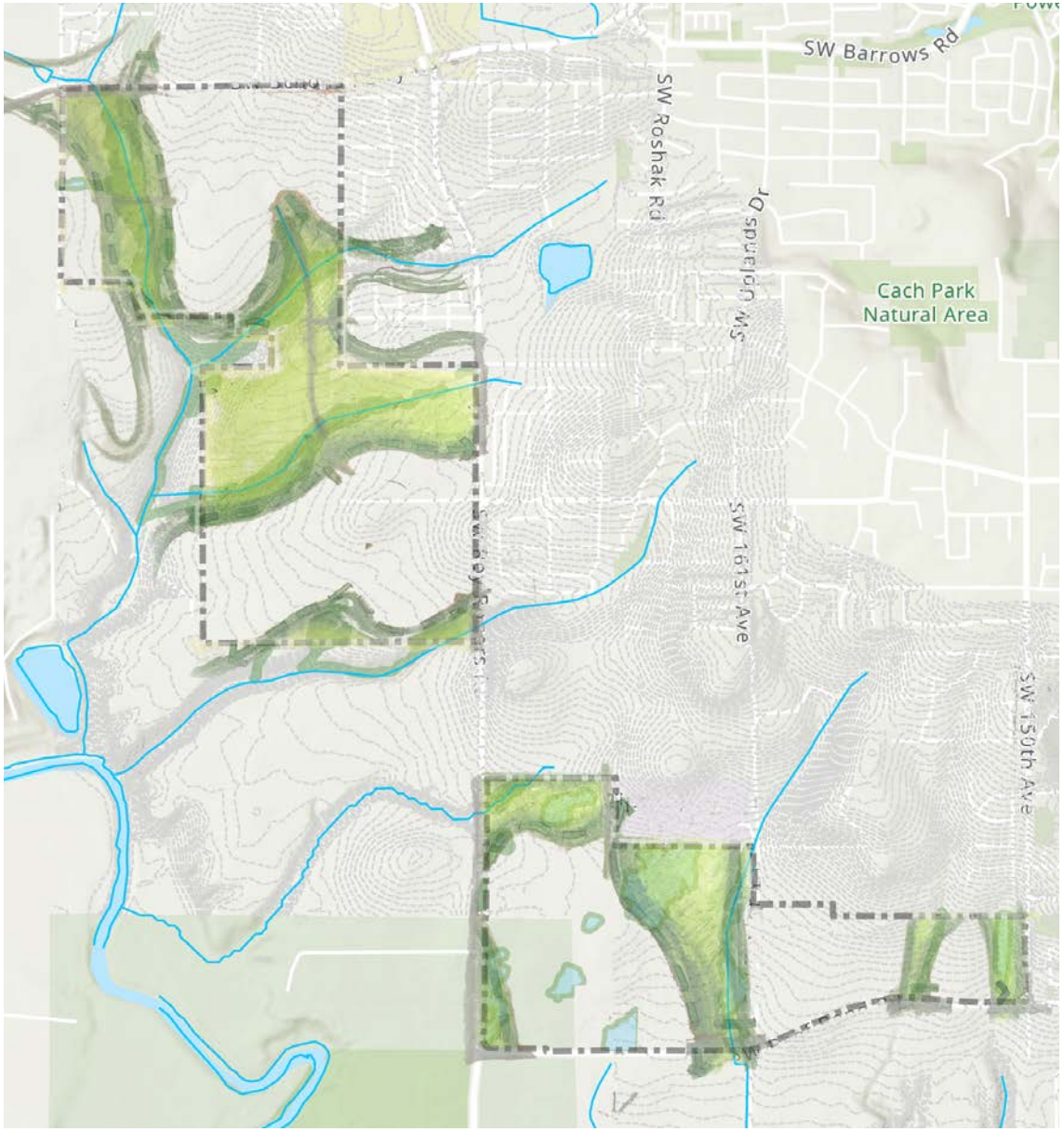
Parks and Open Space

- Community and neighborhood parks are located throughout River Terrace and provide a range of gathering and recreating options
- Parks are accessible and connected to commercial centers and neighborhoods by trails and multi-modal streets
- Parks emphasize natural features such as views and tree groves

Natural Resources

- Natural resources are protected and enhanced to the maximum extent practicable
- Habitat corridors are maintained to support wildlife ranging and migration patterns
- Open stream channels and wetlands are preserved and protected from impacts of development to the maximum extent possible

Natural Resources Study Sketch



III. HOUSING

Housing

Housing is a central component of the River Terrace 2.0 Concept Plan, and the primary reason for undertaking this planning process now. The recent housing needs analysis (HNA) prepared for the City of Tigard projects a total housing need of just over 3,000 new homes by the year 2040. Not surprisingly, much of that need is concentrated at lower income levels. Per the HNA, about 40 percent of new homes built should be affordable to households with incomes that are 80 percent or less of the median family income.

River Terrace 2.0 takes a unique approach to housing, one that aims to provide a meaningful and implementable guide to support Tigard's goal of more housing choices (including affordable choices) for its residents. From the very beginning of the concept planning process, the housing goals were clear:

- River Terrace 2.0 neighborhoods will provide a diversity of housing choices to serve the full range of housing needs for Tigard's current and future residents.
- This plan will integrate opportunities for market rate and regulated affordable housing to facilitate home ownership at all income levels, in all neighborhoods.
- Neighborhoods will be designed to provide opportunity for an average of twenty households per acre.

This chapter presents a visual and quantitative evaluation of potential housing types, site planning options, housing distribution, and affordability strategies for smaller, "middle housing" opportunities in the River Terrace 2.0 concept planning area.

Specifically, this chapter aims to:

- Demonstrate options for integrating affordable rental and homeownership housing into each neighborhood.
- Develop prototypes that can be used in the Tigard River Terrace 2.0 Concept Plan
- Explore potential housing mixes and distributions on a dwelling-unit-per-acre basis for specific block designs to inform development potential, infrastructure financing, transportation planning, and test policy goals established by the project.

	HOUSING UNITS NEEDED	HOUSING UNIT CAPACITY	DIFFERENCE
Residential – Low Density	1,409	635	(774)
Residential – Medium Density	3,411	2,272	(1,139)
Residential – Medium-High Density	1,336	706	(630)
Residential – High Density	519	0	(519)
Mixed Use	741	593	(148)
Total	**7,416**	**4,206**	**(3,210)**

Table 1 - Total Housing Units Needed in the Tigard Planning Area, 2020-2040

What is Meant by Middle Housing?

For this project, the term "middle housing" refers to forms of housing that are neither large-scale apartments (dwelling units inside an apartment building) nor a single detached house (SDH) on a typical fee-simple lot. In between these two types of dwellings - SDH and apartments - exist myriad other housing forms, such as cottage clusters, courtyard units, quads, rowhouses, and additional units on the same lot with a single detached house. These housing types are often called "middle housing," and beginning in 2013 with their previous Housing Needs Analysis, the City of Tigard has explored these housing types through their "Housing Options" planning efforts. In 2018 the city approved code amendments to legalize these middle housing types in all residential zones the city.

Shortly thereafter in 2019, the state of Oregon passed House Bill 2001, which requires cities of a certain size or within the Metro urban growth boundary to allow middle housing types on all lots that currently permit single detached houses, and to do so without placing barriers that would limit their development.

These efforts at both the local and state levels are part of a recent on ongoing slate of sweeping housing reforms intended to address the state's ongoing housing shortage and inequities in the housing market that have led to inequities in wealth-building and economic security for the state's minorities and low- to middle-income households.

History of Middle Housing

Historically, middle housing was a common sight in most American cities. The advent of zoning and development regulation in the 1920's resulted in the eventual exclusion of these housing types in favor of single detached houses on fee-simple lots. This process was hastened in the years after World War II, with vast federal investment in housing through the GI Bill and other programs. This led to the expansion of suburban areas, where cities adopted further zoning restrictions that limited or prohibited middle housing. The "single-family" zoning that was adopted on a widespread basis by most US cities dictated the size of residential lots; the form and shape of dwellings; the types and numbers of households that could live in them; and requirements for providing parking on-site. Single family zoning created large areas with only one type of housing, one which many Americans could not afford. These neighborhoods became monocultures of housing, and by extension, monocultures of people, segregated by age, race, income, and household type. Today, most forms of middle housing are rarely found in suburban, exurban, and peri-urban areas. This exclusion is from where the "missing middle" neologism is derived.

Single Family Zoning and a History of Racial Exclusion

The aforementioned federal home loan subsidy programs favored the development of single family-zoned areas that were intentionally racially exclusive. Most HUD loan programs at one point required that housing development include covenants, conditions, and restrictions that precluded the purchase of homes by racial, ethnic, and religious minorities. This practice had the effect of depriving entire communities of the benefit of intergenerational wealth accrual. For at least the past 75 years, the average American family holds most of its net worth in the form of equity in property ownership. However, exclusion was not the only practice that had an impact on minorities.

The practice of "redlining," where neighborhoods with high levels of minority ownership were graded by insurance and loan companies as "high-risk", meant that the families who owned homes in these neighborhoods saw their equity drop precipitously, as underwriters would no longer approve purchases under federal loan programs. Richard Rothstein, in his book "The Color of Law," details these and many other policies and practices that explicitly enacted and perpetuated segregation and racism. Even with the gains made in the civil rights movement of the 1960's, where segregation was deemed "incompatible with our self-conception as a constitutional democracy", segregation remained largely in place in the form of single-family zoning and inequitable and unethical lending practices. The ramifications of these disastrous policies remain with us today.

After decades of exclusion ranging from being denied home loans, having neighborhoods in which they lived redlined, facing discrimination in employment, and receiving less pay on average than their white counterparts, Black people and other minorities were effectively denied the opportunity to own a home and enjoy the concomitant benefits that accrue from that ownership. Presented with institutional barriers to joining the middle class and building generational wealth, they were essentially excluded from the American dream that white people had been enjoying for decades. Generations of denial have compounded to make it harder for Black people to buy single family homes today. Exclusion and segregation persists between Black and white people in neighborhoods zoned exclusively for single family homes.

Tigard River Terrace 2.0 and middle housing– A neighborhood for everyone

As mentioned above, forms of middle housing are rarely found in suburban areas. There are a few examples of middle housing incorporated into Oregon greenfield projects that are categorized as “intentionally-planned” communities. These include Villebois in Wilsonville, and NorthWest Crossing in Bend.

In most greenfield projects, including Portland metro area urban expansion plans, middle housing is usually missing. In its urban expansion proposal for the River Terrace 2.0 project, by contrast, the City of Tigard has made a commitment to the inclusion of middle housing, the expansion of housing opportunity, and to economically and racially integrated neighborhoods. This is a foundational ethic of the Concept Plan, it considers housing to be a human right. Affordable, attainable housing that provides housing choices for everyone will be included within each new neighborhood in River Terrace 2.0.

Removing Barriers to Middle Housing

Removing the zoning barriers to middle housing will go a long way toward encouraging these forms of housing. The City of Tigard’s Housing Options reforms and Oregon’s House Bill 2001 (Middle Housing) are positive efforts. Affordable housing providers can benefit from the easing of these barriers. They could more easily build small compact housing forms on smaller lots—housing that is inherently more affordable. However, it will take work to encourage a shift in the conventional approaches of the for-profit housing development industry. Much of this work will need to be focused on knowledge-building and concept-proofing, as much of the institutional knowledge about middle housing development has been lost, and there is little to no information on market comparables to guide development pro formas. To understand the challenges, the Tigard River Terrace Housing Team, consisting of Urbsworks, Leland Consulting Group, and Mosaic, conducted research to understand specific barriers and opportunities; findings from that research are summarized below.

Overview of Findings

Small housing and middle housing can be more affordable housing.
This is primarily because middle housing forms are smaller than the conventional suburban single-family structure and are on smaller lots. Reducing the size of the unit and the lot contribute to reducing the overall cost of constructing a home. The home or neighborhood features that have the most significant effect on affordability are:

- Making homes smaller reduces cost.
- Making lots smaller reduces cost.
- Unit size is the greatest factor in determining the home price
- In spite of this, single detached houses are generally the preferred typology for most housing developers due to phasing capabilities and known market risk factors.

Approaches to increase affordability include:

- Reduce cost with smaller homes/lots.
- Increase home buyer spending power with improved loan terms and down payment assistance.
- A city can directly reduce the costs of housing by reducing fees and paying for infrastructure.

The gap between housing needs and housing supply:

- There is a big gap between the size and price of housing that is being provided by the market in Tigard compared with the size needed or desired by buyers and their ability to pay for housing.
- About 60% of homes in Tigard are single detached houses.
- Medium- and large-lot homes are not affordable to the median 3-4-person household in Washington County.
- The average price of single-family dwellings have increased significantly for all lot sizes in the past decade and are unaffordable for most of the Washington County population.
- At 80% of the median family income (MFI), a 4-person household could afford a condominium and maybe a lower-priced rowhouse.
- Tigard's existing housing stock is especially unaffordable for Washington County households earning less than 80% MFI.
- Most households in Tigard with a housing need rent their homes.

The most needed housing in Tigard is:

- Housing that can be purchased for under $400,000
- Housing that can be purchased for under $400,000 is being produced in Washington County and Tigard but not in the current River Terrace area.

Middle Housing Prototypes

A "housing prototype" refers to a mix of middle housing types assembled on a hypothetical block, or a parcel of land surrounded by local-serving streets. The housing prototypes are intended to be assembled together to form a complete neighborhood.

The housing prototypes are illustrated in three-dimensional, to-scale models. The five models test the physical arrangement of housing types to demonstrate several aspects of middle housing:

Physical form
The ability of middle housing to provide different housing types side-by-side on neighboring lots, in forms that are similar to and compatible with single detached dwelling development.

Housing unit counts
Middle housing is often able to achieve dwelling unit counts that are higher than those typically provided in residential zones and can do so in a way that preserves trees and leaves open space for shared or private use.

Household needs
Middle housing arrangements can meet the needs of a wide variety of households and can do so within the same block and neighborhood, providing small, medium and large-sized dwellings on the same block—even on the same lot.

Housing tenure
Through a variety of different land divisions, housing arrangements, and legal structures (e.g., condominiums), any form of middle housing can be set up for homeownership or rental housing, so the housing prototypes illustrate how neighborhoods can provide opportunities for all incomes or housing choices.

Site suitability
Middle housing is suitable for all sites found in the River Terrace 2.0 Concept Plan area, especially because they come in a variety of lot sizes, housing shapes and layouts, and there is flexibility on the location of parking; they naturally lend themselves to sensitive siting in and around natural areas, and forested, sloped sites.

Five Housing Prototypes

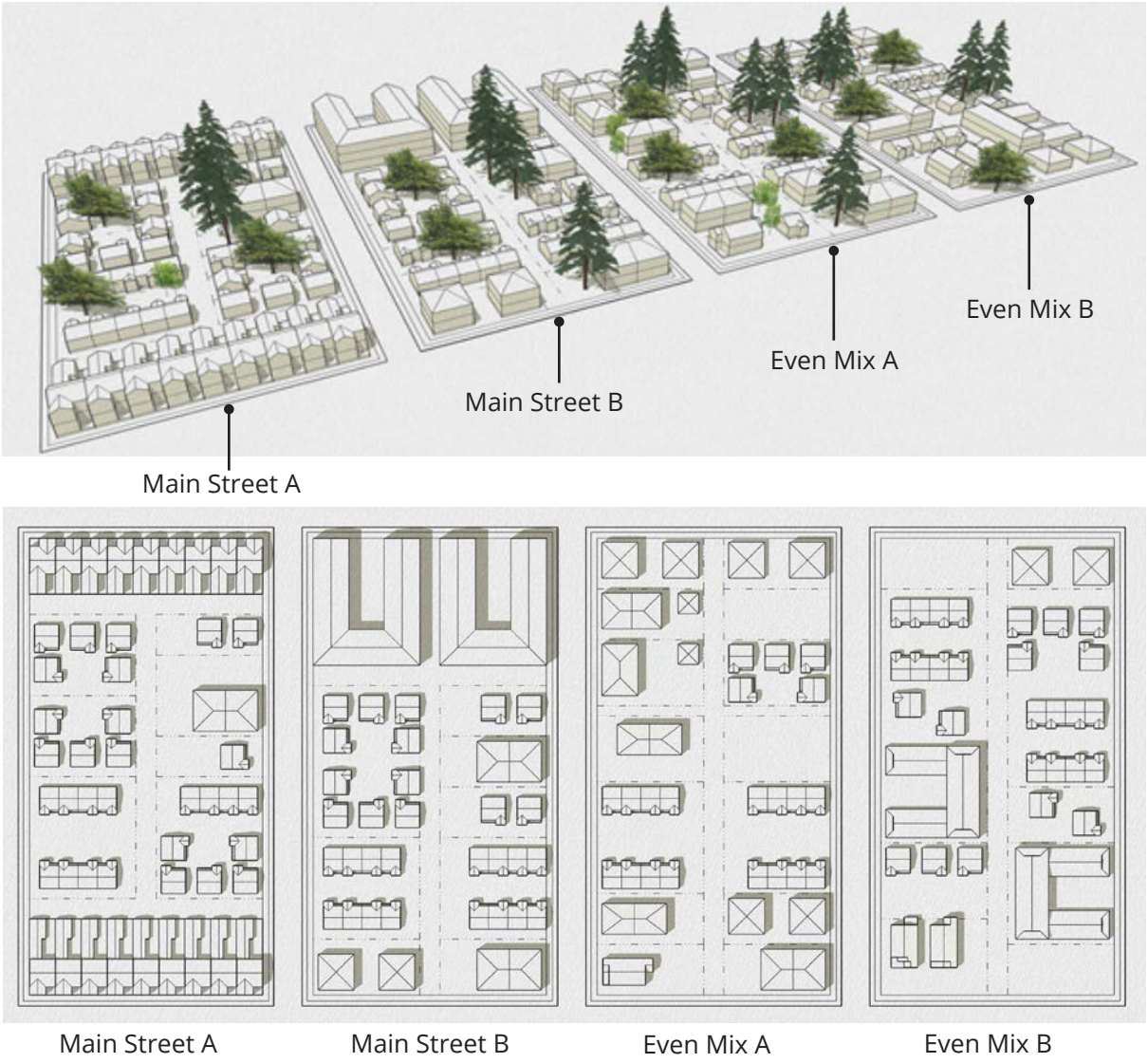
Main Street A – An even mix of higher-intensity housing with townhouses which can be oriented toward a commercial node. In the graphic shown here, the main street could be located at either end of the block, where adjacent to the townhomes.

Main Street B – One side with highest-intensity middle housing which can be oriented toward a commercial node; lower intensity balancing remainder of block. In the graphic shown here, the main street orientation is at the top of the block, adjacent to the higher-intensity housing forms.

Even Mix A – Higher profile, stacked forms of all varieties of housing.

Even Mix B – Lower profile, spread-out forms of all varieties of housing.

Figure 1 - Housing Prototypes - Main Street & Even Mix



Feathered Edge – Strategies for blending housing and natural resource / open space edges without sacrificing density or housing choices.

Figure 2 - Housing Prototypes - Feathered Edge

The housing prototypes were created to test density and unit mix on specific block designs to quantify total development potential for the Concept Plan, and to inform infrastructure financing, transportation planning, and policy goals established by the project. They test the physical feasibility of various middle housing mixes, as well as the feasibility of achieving the target of an average of 20 dwelling units per acre.

The housing prototypes also address key principles of the Concept Planning vision, including:

- A variety of housing should be provided in every neighborhood in River Terrace 2.0.
- Housing that meets different household or family needs should be provided in every neighborhood, to allow for a wide variety of people and households, representing a full spectrum of age groups, households, and income levels to live side-by-side.
- Every neighborhood should include opportunities for a blend of rental and homeownership housing.
- There should be no differentiation between the design and appearance of rental and homeownership housing.
- Neighborhoods on the edges, where there is more access to natural resource areas, public open space, and trails, should have affordable and attainable housing integrated into them, and not be only large-lot housing.

Housing Types Common to All Housing Concepts

The five prototypes include all types of housing:

- Single detached houses
- ADUs (Accessory Dwelling Units, inclusive of what are often called duplexes and triplexes)
- Quads
- Cottage clusters
- Courtyard units
- Rowhouses

Physical Features Common to All Housing Prototypes

Each housing prototype or hypothetical block accommodates an average of 20 dwelling units per acre. Some housing concepts accommodate 20 dwelling units per acre on a single block, and some housing concepts or blocks form 20 dwelling units per acre when combined. Housing types take a variety of forms: tall and stacked, short and spread out, and combinations of these.

Lots are increments of 25 to 30 feet wide, permitting the intermixing of narrow lot dwellings alongside more conventional residential lots, which are typically 30 to 60 feet.

The intermixing of lot widths ensures that affordable compact housing types can sit side-by-side along with more conventional larger-lot detached homes. Exceptions are cottage clusters and smaller-scale apartments, which need larger, aggregated lots.

For the purposes of this study, the block dimensions are 230 feet wide and 450 feet long, or 103,500 square feet (2.38 acres). These dimensions do not include the area for the perimeter local streets, which are assumed to be about 60 feet wide. The number of dwelling units that can accommodated on each block is listed in the Middle Housing Prototypes.

The densities listed for each block prototype are for the net acreage of each block only. For the purposes of calculating total residential units for the entire Concept Plan area, the area of the perimeter local street right of way was included.

Design Approaches For Housing Prototypes

Main Street

Prototype name, location, and description	Dwelling unit density and mix
The Main Street housing prototypes are designed for the following locations: · *Near a commercial center* · *Along a main street* · *Forming the center of a small-scale neighborhood-serving village center.* *There are two variations of the Main Street Housing Prototype:* **Main Street A** *has rowhouses at each end of the block. On one end of the block are low-height garden-style rowhouses, or rowhouses with room for walled gardens in the back or front yard. The rowhouses on both ends are able to accommodate an office space on the ground floor. Either end of the block can be oriented toward a commercial node or main street. The remainder of the block is an even mix of middle housing forms.* **Main Street B** *Main Street B has tall, two to three story stacked units and/or urban rowhouses that allow for conversion to live-work space on the ground floor of the unit. The remainder of the block is an even mix of middle housing forms. The tall rowhouse end is intended to be oriented toward a commercial node.*	**Average number of dwelling units per acre:** *24* **Total dwellings per block (average):** *57* **Housing types included:** · *Single-family detached dwellings, cottage clusters, and cottage cluster variants* · *Attached and detached Accessory Dwelling Units (also duplexes and triplexes)* · *Courtyard units* · *Quads and Quad-variants, which are detached, or combinations of stacked and detached* · *Rowhouses and rowhouse-variants, which include urban-style rowhouses (multiple stories with possible ground floor conversion for live-work space) and garden-style rowhouses (rowhouses with backyards)*

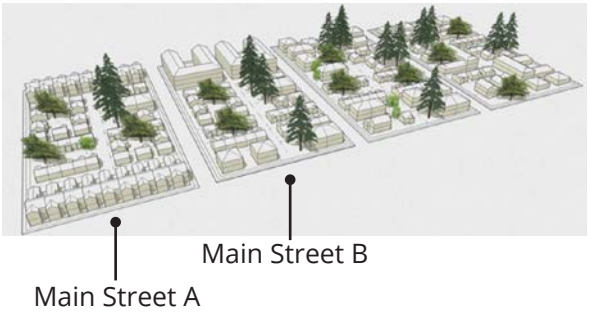


Table 2 - Housing Prototypes - Main Street

Even Mix

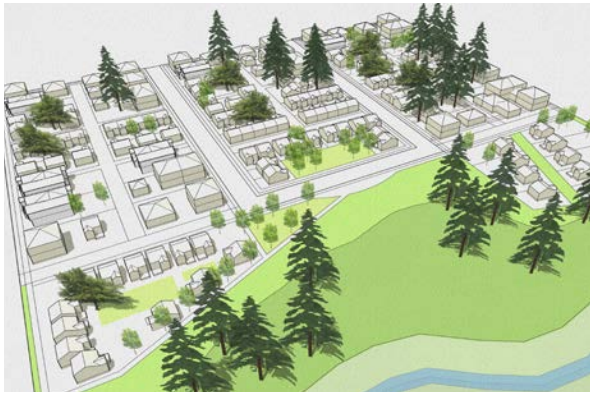
Prototype name, location, and description	Dwelling unit density and mix
The Even Mix housing prototypes are designed to be located in the middle—between the neighborhood edge and the main street or commercial area. The Even Mix housing prototype represents a typical residential neighborhood, however, there are two neighborhood variations, each with a distinctively different physical character: **Even Mix A** has higher profile, stacked forms of all varieties of housing. These include two and three Accessory Dwelling units on one lot (duplexes and triplexes) that are two to two-and-one-half stories tall. Quads and quad-variants are a combination of stacked and detached quads. Alley access provides rear-yard parking. This allows the street side of the block to be fully planted with street trees, because fewer driveways are needed. **Even Mix B** has lower profile, spread-out forms of all varieties of housing. Buildings are typically one to one-and-one-half stories tall. Where taller buildings occur, they are sited around tree groves. Parking is provided on internal, shared surface parking lots, and on the street.	**Average number of dwelling units per net acre:** 20 **Total dwellings per block (average):** 48 **Housing types included:** · Single-family detached dwellings, cottage clusters, and cottage cluster variants · Attached and detached Accessory Dwelling Units (also duplexes and triplexes) · Courtyard units · Quads and *Quad-variants*, which are detached, or combinations of stacked and detached · Rowhouses and *rowhouse-variants*, which include garden-style rowhouses (rowhouses with backyards)

Table 3 - Housing Prototypes - Even Mix

Feathered Edge

Prototype name, location, and description	Dwelling unit density and mix
The Feathered Edge housing prototype is designed to illustrate strategies for blending housing and natural resource or open space edges without sacrificing density or housing choices. Housing types are a blend of the Even Mix housing prototypes (A and B). The Feathered Edge illustration shows three possible design approaches facing the natural resource area: On the left, a complex of detached dwellings surrounding a common green extends out from the end of the block, close to the natural area. On three sides of the complex is an alley or skinny "green street" (a street with minimal paving, designed to minimize and treat stormwater) and on the fourth side is a public trail that provides access to the natural area, parks, and trails. On the center block, a fully paved local street provides a public promenade and access to the natural area via a view lookout and trailhead. On the right, small dwellings on their own lots terrace down the hillside. They are served by a central green street.	**Average number of dwelling units per acre:** 16 **Total dwellings per block (average):** 43 **Housing types included:** · Single-family detached dwellings, cottage clusters, and cottage cluster variants · Attached and detached Accessory Dwelling Units (also duplexes and triplexes) · Courtyard units · Quads and *Quad-variants*, which are detached, or combinations of stacked and detached · Rowhouses and *rowhouse-variants*, which include urban-style rowhouses (multiple stories with possible ground floor conversion for live-work space) and garden-style rowhouses (rowhouses with backyards)

Table 4 - Housing Prototypes - Feathered Edge



Feathered Edge

Acreages and Densities by Subarea

Housing prototypes	Dwelling units per acre		West acres		South acres		Total residential acreage and units by subarea	
	Block (net)[1]	*Block and street (gross)*[2]	Acres	Units	Acres	Units	Acres	Units
Main Street A and B	**24**	*16.79*	23.84	400	26.61	447	50.45	847
Even Mix A and B	**20**	*14.14*	85.17	1,204	70.01	990	155.18	2,194
Feathered Edge	**16**	*11.51*	98.06	1,129	32.67	376	130.73	1,505
Total residential acreage and units (all subareas)							**336.36**	**4,546**

Table 5 - Housing Prototypes - Acreages and Densities by Subarea

1. These numbers represent the dwelling units per acre on the net block; not including the local perimeter streets.
2. These numbers represent the dwelling units per acre on the net block and include the area of the perimeter local street right of way, and were created for the purposes of total residential area acreage calculations.

Middle Housing Affordability Strategies

River Terrace 2.0 will be a neighborhood for everyone. This means that housing choices in River Terrace 2.0 should be available to all household types, regardless of income. With that goal in mind, Leland Consulting Group prepared a Housing Affordability Evaluation for this project to explore policy approaches and incentives that the City could implement to encourage development of affordable housing in River Terrace 2.0. The evaluation considers past studies, demographics and housing trends, and housing affordability factors – and makes recommendations for future actions and programs.

Recommended strategies are summarized here.

- **Land acquisition and banking.** The City could acquire land in River Terrace 2.0 (using CET or other funds, as described in the 2019 Tigard Housing Strategy Implementation Plan). Whether by a public agency or third-party housing developer, land acquisition is key step in enabling affordable housing. Public agencies or nonprofits use land acquisition to secure sites for affordable housing where land prices are increasing, thus making affordable housing development financially feasible.
- **Matchmaking.** The City can act as a matchmaker in River Terrace, by connecting affordable developers and homebuilders to development opportunities. During area planning and infrastructure construction phases, the City may become aware of willing property sellers who can be matched with affordable developers. Sometimes other public agencies own surplus land that can be conveyed. The City could also work to educate affordable developers about available funds and incentives, whether offered by the City or other parties.
- **Education and information sharing.** Based on the housing programs prepared to date, and the emphasis on middle housing types and overall affordability, River Terrace 2.0 will be distinctive in the region. By sharing this vision and the related zoning and incentives with the public and development community (developers, homebuilders, lenders, brokers, designers, others) the City may be able to generate interest among the segment of the development community that is interested in implementing that vision.
- **Providing incentive or matching funds.** It is possible that the City could identify development partners interested in building one or more particular types of affordable housing in River Terrace, for example, through a Request for Interest (RFI) or other means. The City could then provide certain funds (via CET or other sources) or other incentives to the best-qualified respondents.

- **Infrastructure.** Another way that the City may be able to support affordable housing projects in River Terrace is through the construction of infrastructure or other site development actions (e.g., grading or terracing). It is often difficult for affordable housing projects to pay for infrastructure on difficult-to-develop sites (e.g., sloped, those with large amounts of roads, or where intersection improvements are required). The City could use its funds (e.g., CET, CDBG, or other) to assist.
- **Community land trust model.** Community land trusts (CLTs) are nonprofit, community-based organizations primarily used to ensure long-term housing affordability, usually with an emphasis on homeownership. A community land trust acquires land and maintains ownership of it. Prospective homeowners enter into a long-term renewable lease with the land trust in which the land trust owns the land, and the homeowner builds equity by making payments on the home. The CLT model lowers the cost of homeownership by reducing or eliminating the land acquisition cost (and sometimes other costs) from the building ownership costs, and also decreases the likelihood of displacement in areas where land values are increasing.
- **Tiered system development charges (SDCs).** System Development Charges (SDCs) are one-time fees charged to help pay for the public facilities (transportation, sewers, and parks) required to meet growth-related needs. SDCs can be tiered according to dwelling size. The assumption is that smaller units will have less impact on public infrastructure and should therefore pay less; reduced SCDs make small-footprint homes more affordable.
- **Tax abatement.** Tax abatements reduce or eliminate property tax payments for a development for a designated length of time, usually ten years or less. Property tax abatements can be offered to developers to incentivise affordable housing developments, or to homebuyers, to decrease ownership costs. Tigard currently has two tax abatement policies that could be used in River Terrace 2.0: a Vertical Housing Development Zone and a Nonprofit Low-Income Housing Program

IV. PROJECT CONTEXT

River Terrace 2.0 is comprised of two urban reserve areas, designated as Roy Rogers West and Roy Rogers East on Metro's Regional Urban and Rural Reserves Map (see Figure 3). Now known as River Terrace West and South, these two areas total nearly 500 acres of land that has been identified for accommodating future urban development.

Located at the south and west boundaries of Tigard's existing City limits, River Terrace 2.0 currently consists of agricultural land and some homes on relatively large lots. River Terrace 2.0 is bounded to the north by SW Scholls Ferry Road and the South Cooper Mountain community of Beaverton. To the west lies designated rural reserve land and undesignated land within Washington County. The southern boundary of River Terrace 2.0 is SW Beef Bend Road and the new Kingston Terrace area (King City's recent UGB expansion). The eastern edge of the plan area is adjacent to the original River Terrace community of Tigard.

Although not geographically connected, River Terrace West and South are linked by the surrounding street network and the larger regional context within which they are located. Planning for both areas together allows a more coordinated and cohesive approach to urbanization and provides a comprehensive strategy for funding and phasing of future development.

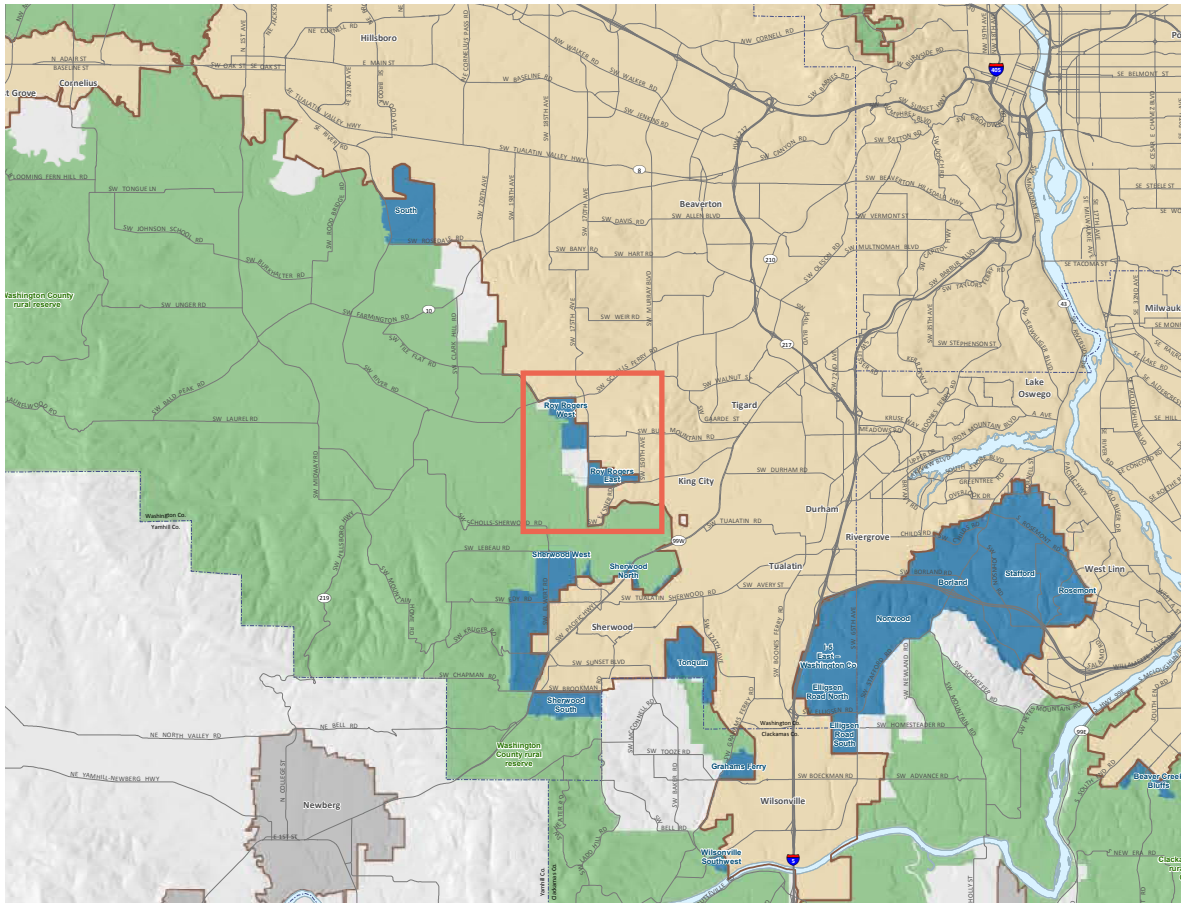


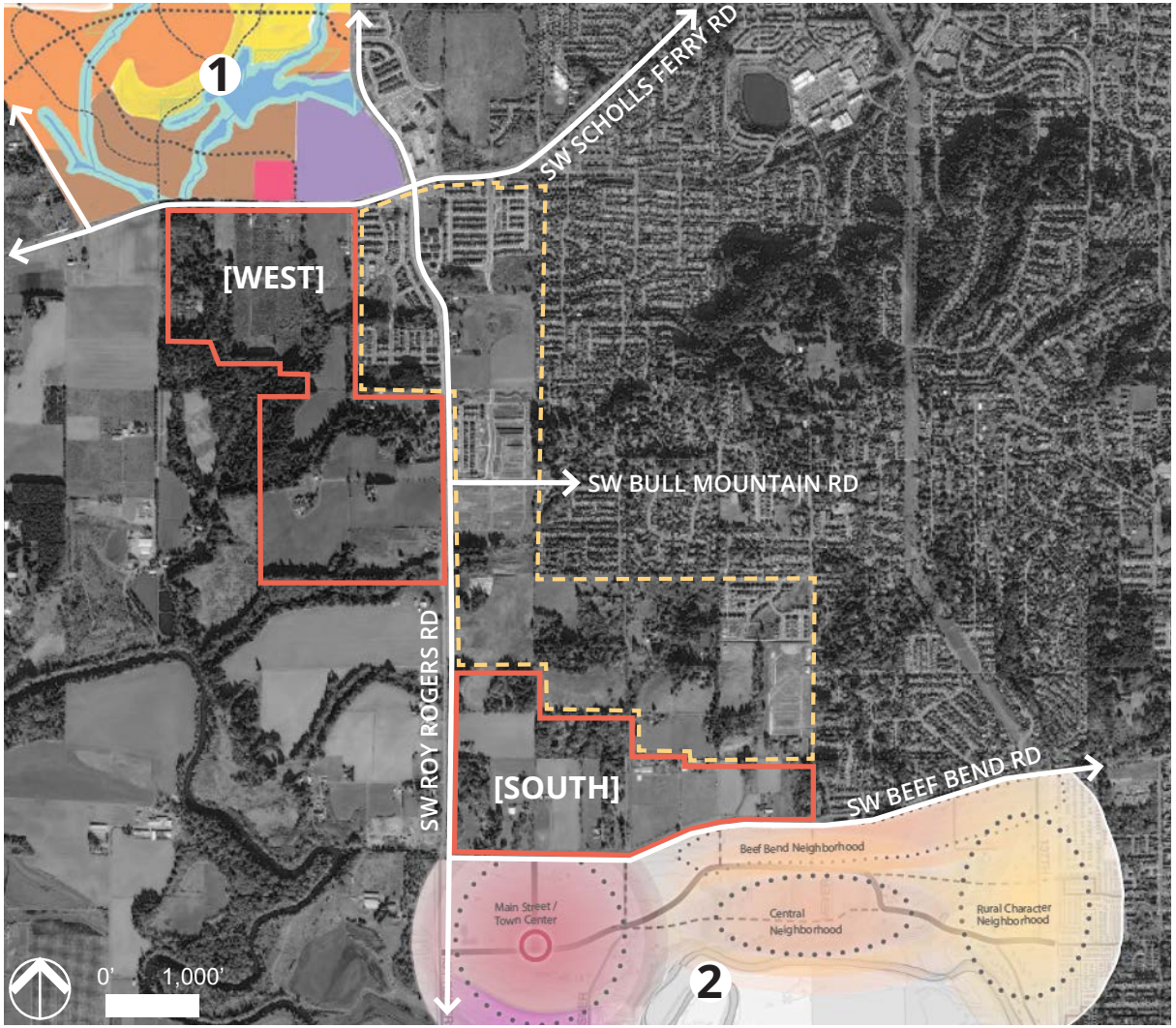
Figure 3 - Metro Regional Urban and Rural Reserves Map

Planning Context

Much planning is underway in and around River Terrace 2.0. This concept plan was developed to coordinate with and complement other planning work being done in Tigard and its neighboring jurisdictions.

- **Tigard Housing Needs Analysis (HNA).** An updated HNA is being prepared concurrently with the River Terrace 2.0 Concept Plan and is anticipated to be adopted by summer of 2021. The HNA provides guidance and strategies that inform the City's housing work and is critical to establishing housing policy and demand for River Terrace 2.0.

- **Tigard Transportation System Plan (TSP) Update.** Tigard's TSP is a roadmap for investments in the community's shared transportation system; one intended to serve all road users including pedestrians, bicyclists, transit users, drivers, and freight. The TSP update will be guided by community input and will build off Tigard's Strategic Vision and Complete Streets policy, each aimed at supporting equitable access for road users of all ages and abilities. The TSP is expected to be complete fall of 2021.



Legend

River Terrace 2.0 Project Area
River Terrace 1.0

1 South Cooper Mountain Concept Plan
2 King City Concept Plan

- **Tigard Parks Master Plan Update.** Tigard is in the process of updating its Parks & Recreation Master Plan, a process that typically occurs every ten years. The plan sets a vision for the future of parks and recreation in Tigard and recommends investments the City can make to achieve the community's vision.

- **Kingston Terrace Community Plan.** King City added land to its urban growth boundary in 2019 and is now developing a community plan for the new area. The Kingston Terrace Community Plan area is directly south from River Terrace South and includes plans for a town center and residential neighborhoods.

- **South Cooper Mountain Main Street.** The South Cooper Mountain community, located just north of River Terrace West, is currently developing a main street mixed use area with commercial retail and civic uses, along with affordable housing.

- **River Terrace 1.0.** Tigard's first urban growth boundary expansion occurred to the east and north of this concept planning area, i.e. RT 1.0. The community plan for RT 1.0 was adopted in 2015, and it is currently in the process of developing at a fast pace. This concept plan builds off the land use and infrastructure planning and policies developed during RT 1.0, particularly with regard to stormwater management.

- **Washington County Urban Reserves Transportation Study (URTS).** Washington County completed URTS in 2020 to identify needed road improvements to serve future development and outline best practices for the County and cities to plan for growth and future transportation impacts. URTS identifies an extension of Tile Flat Road through the River Terrace 2.0 study area.

Baseline Conditions

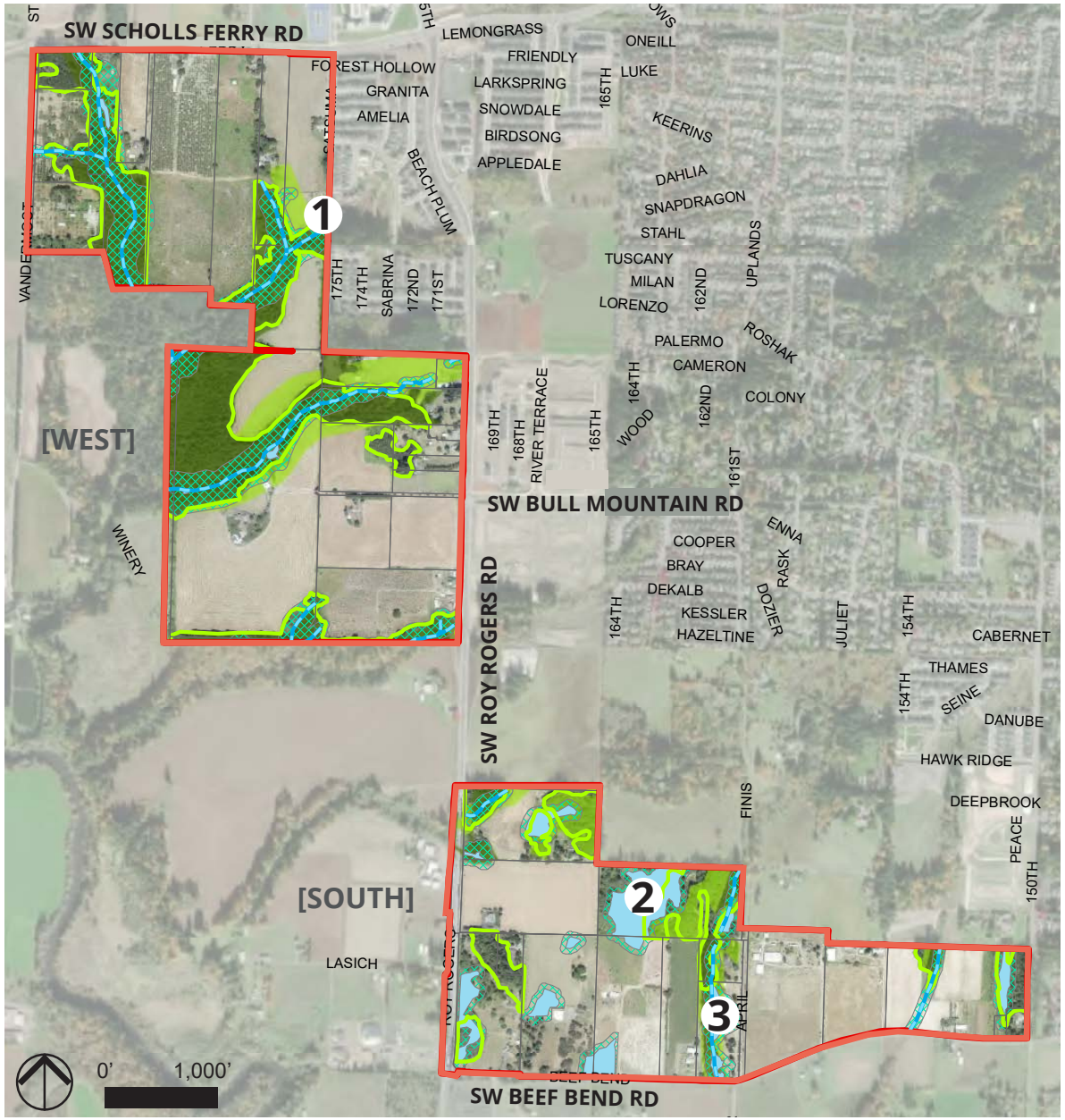
At the beginning of the process, existing conditions in River Terrace 2.0 were assessed and evaluated to better understand how a new community could fit within the physical context of the land. This baseline assessment highlights how dominant landforms of the area (hills and streams, for example) will shape land use and transportation patterns and how public utilities can be efficiently extended. All of this information together provided the backdrop for development of the concept plan alternatives, which are discussed further in Chapter V.

Natural Resources

The River Terrace study areas contain a number of natural resources that have been identified consistent with state and local regulations, including:

- Wetlands and associated vegetated corridors
- Significant tree groves
- Water quality resource areas (streams and associated vegetated corridors)
- Habitat conservation areas

Figure 4 - Existing Natural Resources



Legend

- River Terrace 2.0 Project Area
- Stream
- Taxlot
- Tree Grove
- Title 3 Wetland
- Title 3 Vegetated Corridor

Title 13 - Habitat Conservation Areas

- High Value Habitat
- Moderate Value Habitat
- Lower Value Habitat

Wetlands

- **1** T1-1 Wetland
- **2** RT-2 Wetland
- **3** RT-6 Wetland

River Terrace West

In River Terrace West, the analysis found that the predominant natural resources are existing stream drainages and their associated vegetated corridors. Those areas are part of, and surrounded by, larger habitat conservation areas that connect throughout the study area and beyond. Significant tree groves (primarily Douglas fir, Oregon white oak, Oregon ash, and others) were also identified along and between the stream drainages. There is a small wetland in River Terrace West (T1-1) that is considered locally significant because it connects with a larger wetland outside the study area.

River Terrace South

The analysis found that the natural resource areas in River Terrace South consist primarily of wetlands, tree groves, and habitat conservation areas. There are two larger wetlands in this area that are considered locally significant per Tigard's criteria; those wetlands are shown as RT2 (6.9 acres) and RT6 (2.7 acres) on Figure 4. Locally significant wetlands and their associated vegetated corridors are protected by Tigard's Sensitive Lands provisions (Chapter 18.510 of the Tigard Municipal Code); development activity in those areas is highly restricted. Other wetlands may be considered jurisdictional wetlands that would be subject to the standards of other agencies, such as Clean Water Services or the Army Corps of Engineers. Significant tree groves and identified habitat areas are distributed throughout River Terrace West as well.

The full Environmental Analysis Report can be found in Appendix C.

Dominant Landforms

River Terrace West

The highest point in this area stretches along Scholls Ferry Road at an elevation of approximately 275 feet. Viewshed analysis found that Mount Hood can be seen from three locations slightly south of the Scholls Ferry Road corridor. This northern area is also shaped by two drainage tributaries that are part of the Tualatin River network converging just outside the western boundary. Slopes gradually descend south and west from the high point becoming steeper within drainage areas. Existing dense canopy coverage is predominately found within the drainage fingers.

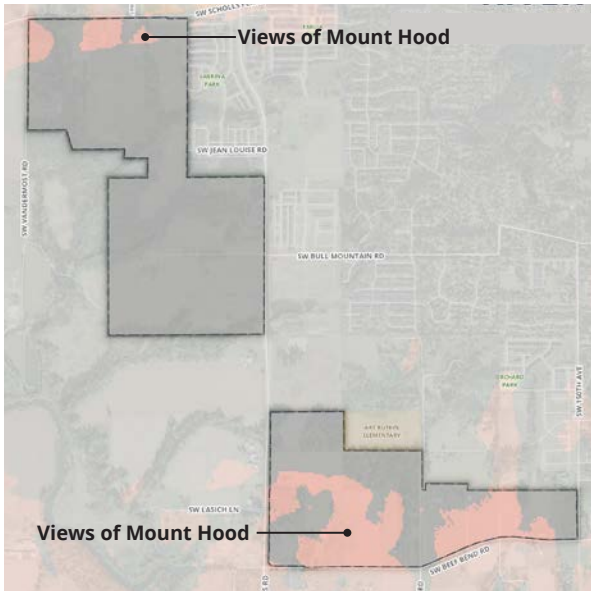
A notable knoll land feature is located on the southern portion of River Terrace West, extending west from the Roy Rogers Road corridor into the middle of the site. From this knoll slopes gradually fall south and west toward two adjacent tributaries framing this portion of the site.

River Terrace South

The north side of River Terrace South is also the high point of this site. On the west portion, the slope falls gradually south toward Beef Bend Road, while the east portion has slightly steeper slopes. Viewshed analysis found that Mount Hood can be seen from much of the southern half of this area. Existing wetlands fragment this area, along with dispersed pockets of tree canopy.

Slope Analysis Study Sketch

Viewshed Analysis



Public Infrastructure

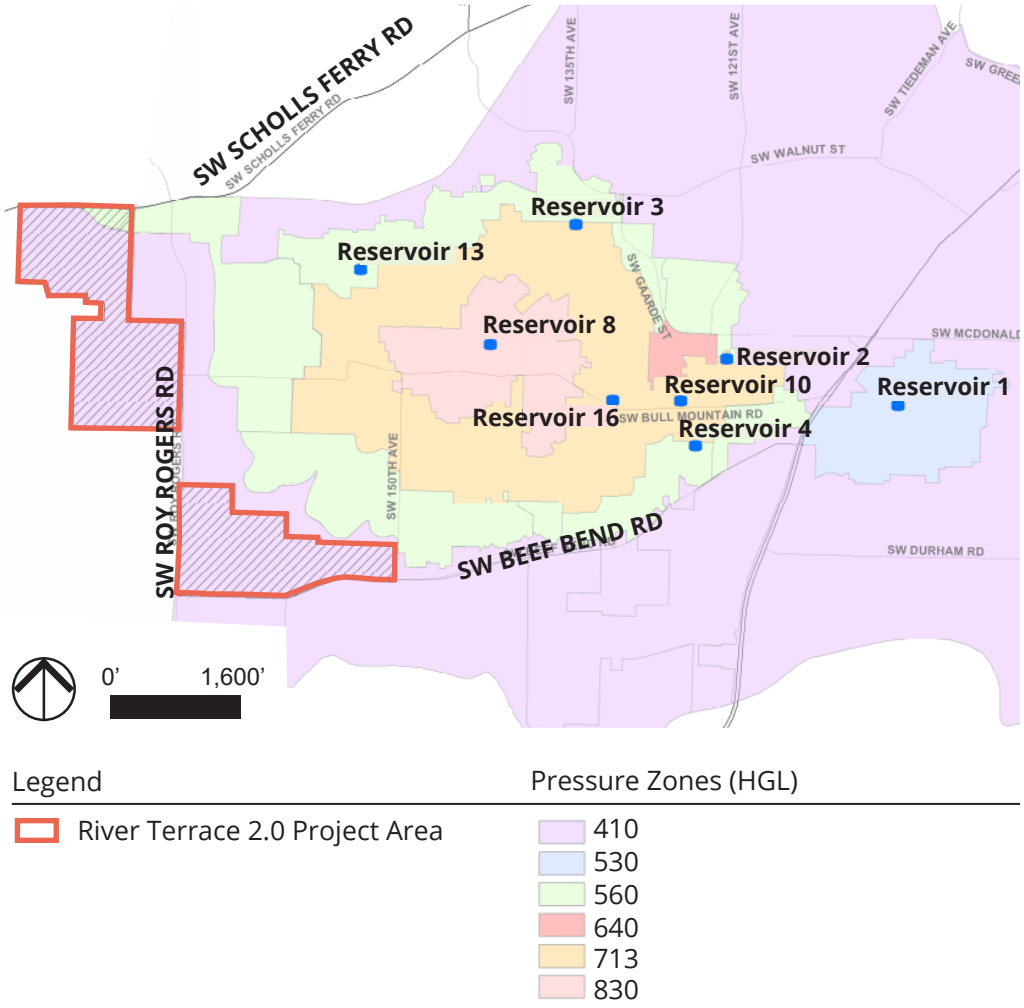
Water

In 2014, the City completed an addendum to their 2010 Water System Master Plan (2010 WSMP Addendum) that focused on the water infrastructure needs for the area of River Terrace, located on the western border of the Tigard Water Service Areas (TWSA). The plan also considered the sizing of infrastructure needed to plan for water service to the River Terrace West and South areas.

The City adopted an updated Water System Master Plan (WSMP) in December of 2020. This WSMP provides updated water demand forecasts and includes projected demands in the River Terrace West and South areas, as well as the anticipated pumping and storage needs to serve these areas.

Generally, water connections are intended to extend to River Terrace West from the east and to River Terrace South from the north. The elevations in these areas are within the City's 410 Pressure Zone (PZ). There is an existing 18-inch diameter water main along SW Scholls Ferry Road, northeast of River Terrace West, that connects to a smaller diameter main at SW Roy Rogers Road. There is also a 16-inch diameter main that extends west along SW Bull Mountain Road and ends at the eastern boundary of River Terrace West.

Figure 5 - Existing Water Pressure Zones



Sanitary Sewer

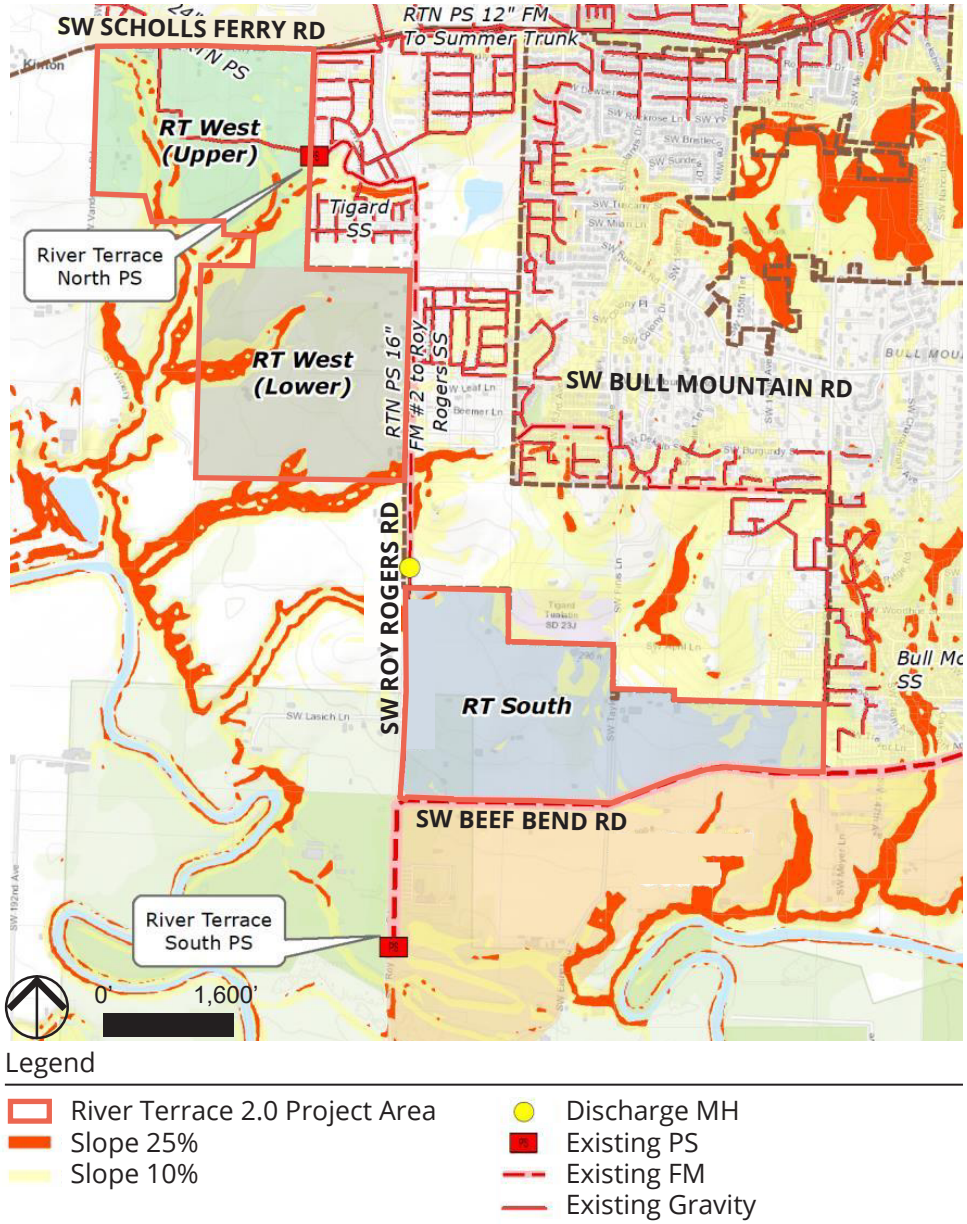
For the purposes of sanitary sewer discussion, River Terrace West has been divided into an upper and lower section which are approximately 160-acres and 140-acres, respectively. Both the upper and lower areas have well-defined flow paths with slopes exceeding 25 percent in some areas. The land generally slopes from the northwest to the southeast. The areas are largely undeveloped pasture and farmland.

The Tigard sanitary sewer system serves the area east of the River Terrace North pump station, between SW Scholls Ferry Road and Jean Louise Road and is just east of River Terrace West (Upper). The collection system is predominantly 8-inch to 12-inch pipes and flow is conveyed north to the River Terrace North pump station.

The existing River Terrace North pump station collects wastewater from the South Cooper Mountain and River Terrace North developments and is currently configured to pump north via a force main to the Summer Creek Trunk. As additional development occurs and the Summer Creek Trunk reaches capacity, the pump station will be reconfigured.

The Roy Rogers gravity system will collect wastewater from developments in the River Terrace West area and City of Tigard east of Roy Rogers Road, and from the River Terrace North pump station until the force main is extended to the Bull Mountain Trunk.

Figure 6 - Existing Sanitary Sewer System



The River Terrace South pump station is designed to convey wastewater via a 16-inch force main to the Bull Mountain trunk. The near-term service area includes wastewater from the Roy Rogers gravity system. As expansion in Kingston Terrace occurs, the River Terrace South pump station will also convey flows from this area. As development occurs in the River Terrace South area, it is anticipated the existing Pleasant View pump station will also be decommissioned and conveyed via gravity through River Terrace and adjacent developments to the east to the River Terrace South pump station.

The Bull Mountain sanitary sewer system services the area north of Beef Bend Road and is just downstream of the connection from the River Terrace South pump station and River Terrace North pump station future connection as well as the existing Bull Mountain pump station. The Bull Mountain system conveys flows to the Bull Mountain trunk, which is a shallow 21-inch diameter pipe.

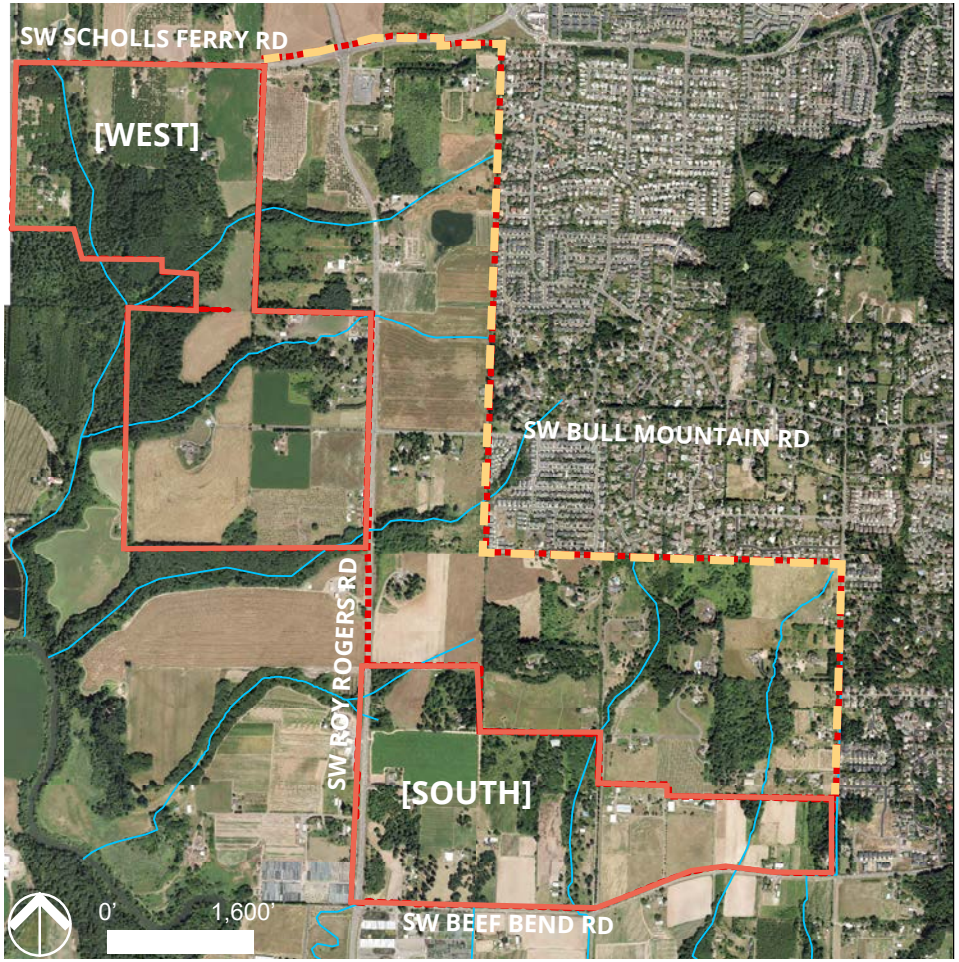
Clean Water Services (CWS) owns and manages the sanitary sewer interceptors and pump stations, and is responsible for planning of major sewer systems in the region. In addition, CWS manages sanitary sewer systems in the urban unincorporated areas of Washington County.

Stormwater

For the purpose of planning for stormwater management in River Terrace 2.0, the pre-development baseline (Figure 7) is based on the condition of land cover in 2011, which is the year that this area was officially designated as urban reserve land by Metro. Both River Terrace West and South generally drain south and west via ten small creek channels. These creek channels are steep and have potential for channel erosion due to the fine sediment and significant velocity conditions within the drainages.

Infiltration potential is also generally poor in the River Terrace 2.0 study area due to the underlying clay soils and basalt bedrock. Both of these conditions (steep channels and lack of infiltration) will require careful consideration for stormwater planning. River Terrace 1.0 has a CWS-approved sub-basin strategy with stringent stormwater standards for development to protect against stream erosion. Those streams are the same streams that run through River Terrace 2.0; planning for stormwater management in River Terrace 2.0 will take a similar approach to the strategy used in River Terrace 1.0.

Figure 7 - Existing Stormwater Pre-developed Land Use (2011)



Legend

- River Terrace 2.0 Project Area
- River Terrace 1.0
- Existing Drainageway

Street Network

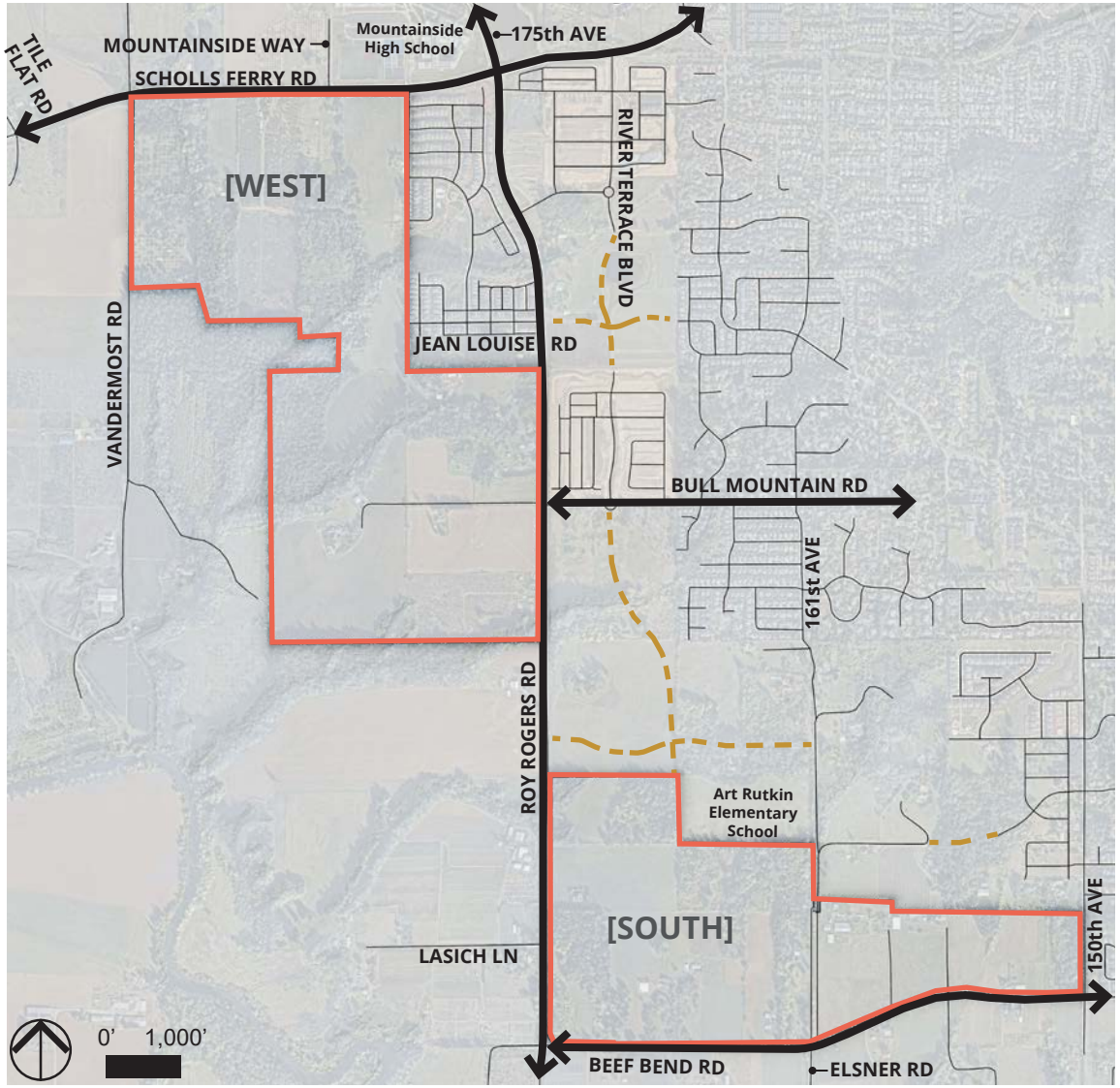
There is currently not a defined street network within the River Terrace 2.0 study area; existing roads are primarily local access drives and are generally unpaved. Adjacent to the study area are several arterial and collector roads that will be extended through, or connected to, the ultimate River Terrace 2.0 street system.

River Terrace West is bounded to the north by SW Scholls Ferry Road and to the east by SW Roy Rogers Road, both of which are four to five lane arterial roads under Washington County jurisdiction.

River Terrace South is bounded by SW Roy Rogers Road to the west and SW Beef Bend Road to the south. Beef Bend Road is a two to three-lane arterial road, also under Washington County jurisdiction. SW Bull Mountain Road is a two to three-lane collector road that currently ends at the eastern extent of River Terrace West and will ultimately extend west into the Concept Planning area.

SW River Terrace Boulevard is a planned and partially built collector boulevard that extends south from SW Scholls Ferry Road and will eventually connect with and through River Terrace South.

Figure 8 - Existing Streets Network



Legend

- River Terrace 2.0 Project Area
- Master Planned Streets (Outside Project Area)

There are a number of planned transportation improvement projects identified in the Tigard and Washington County Transportation System Plans that are considered as part of the baseline condition for River Terrace 2.0.
Those projects are:

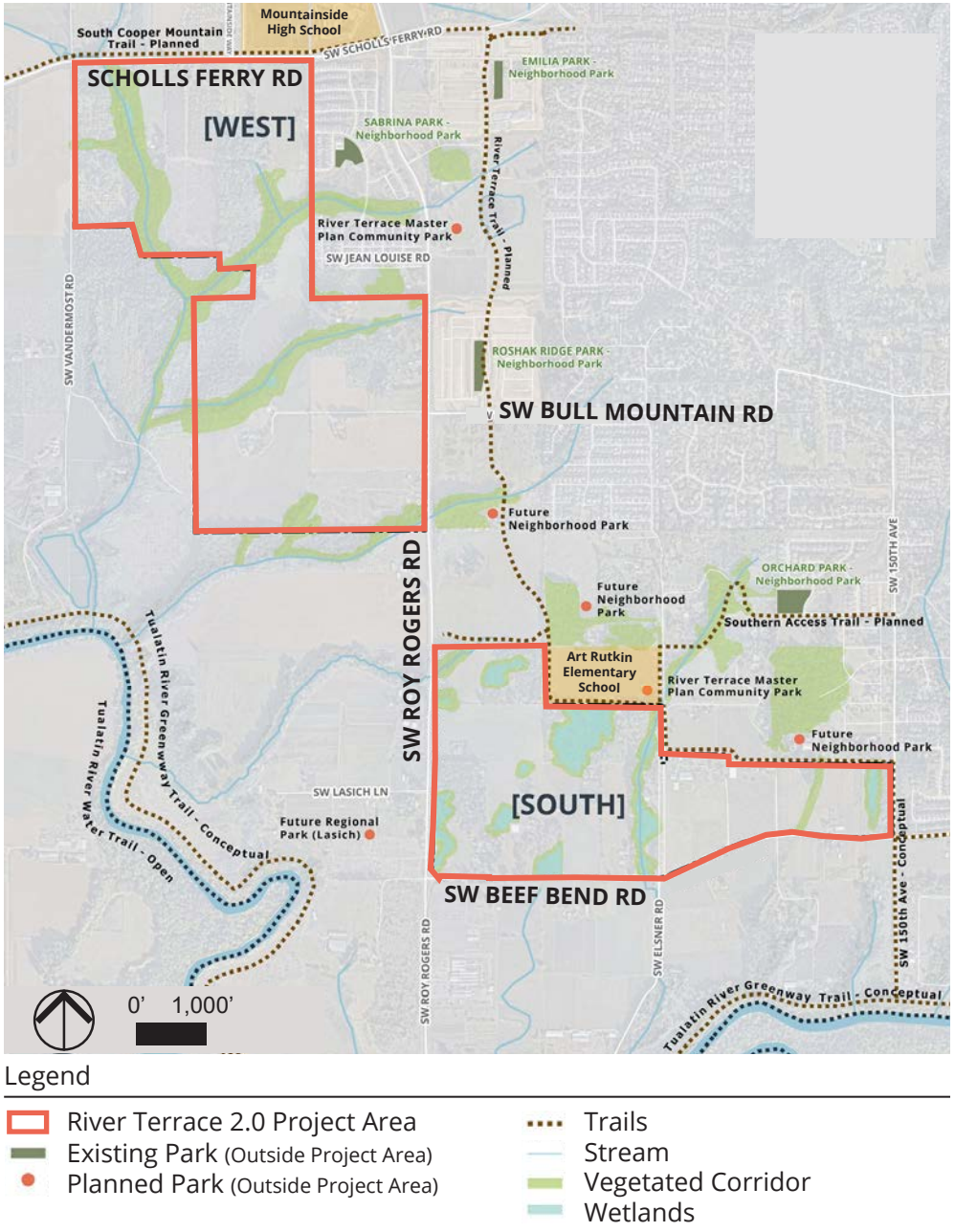
- SW Scholls Ferry Road widening to five lanes with bike lanes and sidewalks from SW Roy Rogers Road to SW Tile Flat Road
- River Terrace Boulevard completion from SW Scholls Ferry Road south to SW Beef Bend Road, including associated sections of the River Terrace Trail that have not yet been built.
- SW Roy Rogers Road widening to five lanes south of SW Scholls Ferry Road with bike lanes and sidewalks
- SW Beef Bend Road widening to three lanes with bike lanes and sidewalks from SW Roy Rogers Road to OR 99W
- SW Jean Louise Road extension; SW River Terrace Boulevard extension; SW Woodhue Street extension; 161st Avenue extension; SW Potomac Road extension and traffic signal installation at SW Roy Rogers Road

Currently, there is no transit service in proximity to the River Terrace 2.0 study area. The closest existing transit is TriMet bus line number 62, which runs along SW Scholls Ferry Road. TriMet has plans to extend the number 56 bus line from Washington Square Mall to South Cooper Mountain, which would provide service to Mountainside High School and the northern end of River Terrace West. Funding for that extension has not been secured and timing is unknown at this point.

Parks and Trails

Adjacent to the River Terrace 2.0 study area, the existing trail network and parks facilities are just beginning to be developed. Some segments of the River Terrace Trail are built, but most of the trail alignments shown in Figure 9 are either planned or conceptual trials. The existing parks are also relatively new, developed along with neighborhoods of the River Terrace 1.0 area.

Figure 9 - Existing Parks and Trail Network



Land Use Conditions

Zoning

Land within the River Terrace 2.0 planning area is currently under the jurisdiction of Washington County and has County zoning designations.

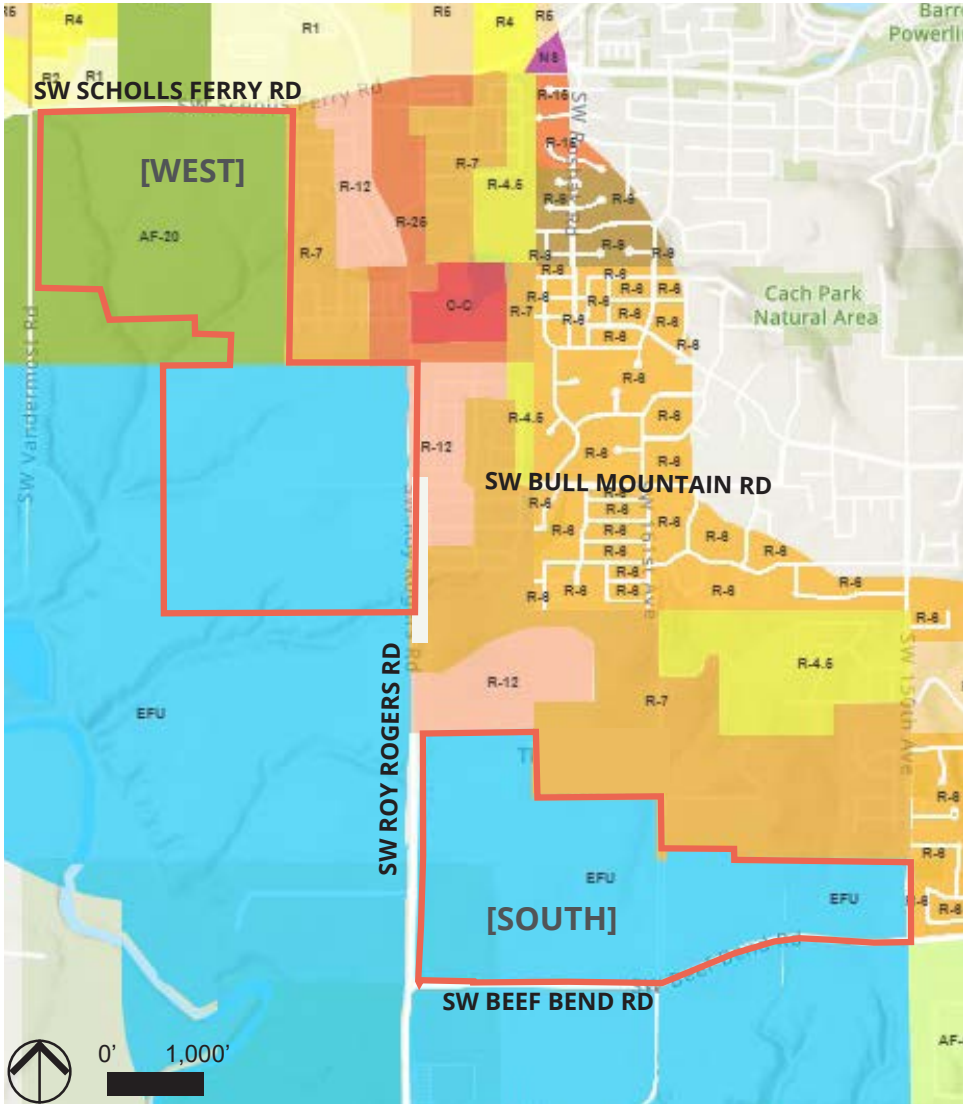
The southern portion of River Terrace West is zoned EFU (exclusive farm use) and the northern portion is zoned AF-20 (exclusive agriculture and forest use). Land surrounding River Terrace West is:

- Washington County designations EFU and AF-20 to the west and south
- City of Beaverton R1 and R2 residential designations to the north across SW Scholls Ferry Road
- City of Tigard R-7 and R-12 residential designations to the east

Land in River Terrace South is zoned EFU. Surrounding land is:

- Washington County designation EFU to the west and south
- City of Tigard R-7, R-8, and R-12 residential designations to the north and east.

Figure 10 - Zoning Map



Market Factors

Planning for a complete community means that commercial and employment areas must be considered; a complete community integrates opportunities for people to work, shop and meet their daily needs in close proximity to their homes. While there are areas of overlap between commercial and employment uses, they serve different markets and developers who build them use different parameters when deciding what and where to build. To understand the full context of market factors, commercial and employment uses must be evaluated together and separately.

The "market area" for commercial uses is usually smaller than the market area for employment uses. Patrons and employees at commercial centers most often come from the surrounding one to five-mile areas. Most sales are also in this area. Employment uses tend to draw employees from a larger area—sometimes the entire region—and sell their goods and services regionally, or even nationwide or beyond.

River Terrace 2.0 is one of three urban growth boundary expansion areas in the southwest of the metropolitan region. Others include Beaverton's Cooper Mountain and King City's Urban Growth Boundary expansion area (Kingston Terrace). How and when these competing areas develop are important considerations for future commercial prospects in River Terrace 2.0.

River Terrace 2.0 is currently at the edge of the urbanizing area for the Metro region. However, based on historic land use trends, it is anticipated that further development of land to the west will occur at some point. Analysis of commercial/ employment demand will take a phased approach to assessing development potential in River Terrace 2.0.

A River Terrace 2.0 Commercial Market Analysis prepared by Leland Consulting Group is provided in Appendix D.

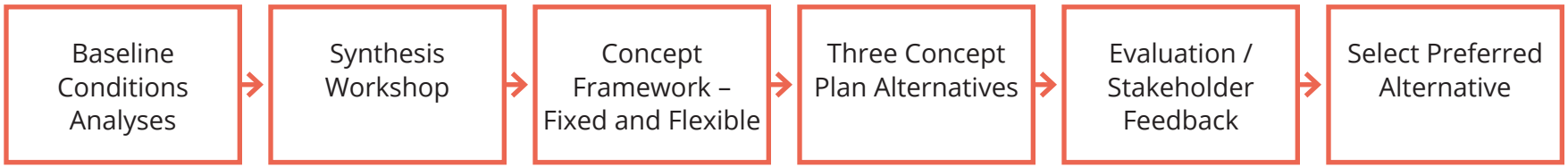
V. CONCEPT PLANNING

Synthesis & Concept Frameworks

Development of concept plan alternative scenarios began with a series of synthesis workshops intended to tie together information generated by the baseline evaluations and through preliminary discussions with the Community and Technical Advisory Committees. From these synthesis exercises, a framework was developed to identify key components that would be fixed within each concept plan alternative and those that could be flexible. For example, one fixed element of both River Terrace West and South was that each would include supportive commercial centers and employment lands. The location, size, and composition of these commercial centers were flexible elements that could be explored in the three different scenarios. Other fixed elements included:

- A variety of housing types will be incorporated into all neighborhoods
- Connections for pedestrians, bicycles and other non-vehicle ways of travel will be prioritized
- Land use patterns will be transit-supportive
- Development will be “feathered” (gradually transitioned) at the natural edges
- Parks and open spaces will be provided throughout
- Protection of natural areas will be prioritized

The goal was to create three viable concept plan alternatives for evaluation, all of which were consistent with the Guiding Principles established at the outset of the project.



Concept Alternatives

Concept A

Concept A included three large commercial centers in highly visible locations at the edge of the neighborhood along major roads. Community parks were located near the nodes. Larger housing types surrounded the centers and tapered to smaller housing at the natural edges.

Housing

- Larger housing forms around the commercial nodes.
- Smaller housing forms at the edges

Commercial Nodes

- Commercial centers at edges, next to major streets
- Greater potential for large grocery store and employment uses

Transportation

- Maximized transit access at edges on busy roads
- Commercial centers were more auto-oriented with parking that can be shared

Concept A - 3-D Model

Legend

Commercial / Mixed-use Node

Neighborhood

Concept A - Building Form Profile

Commercial / Mixed-use Node

Neighborhood Edge

Concept B

Concept B emphasized three internal main street corridors that connected to the major perimeter streets. Community parks were typically located at the ends of corridors and provided connections to natural areas. Housing sizes and forms were generally more uniform throughout, although there is variation from block to block.

Housing

- Housing is similar in size and form throughout

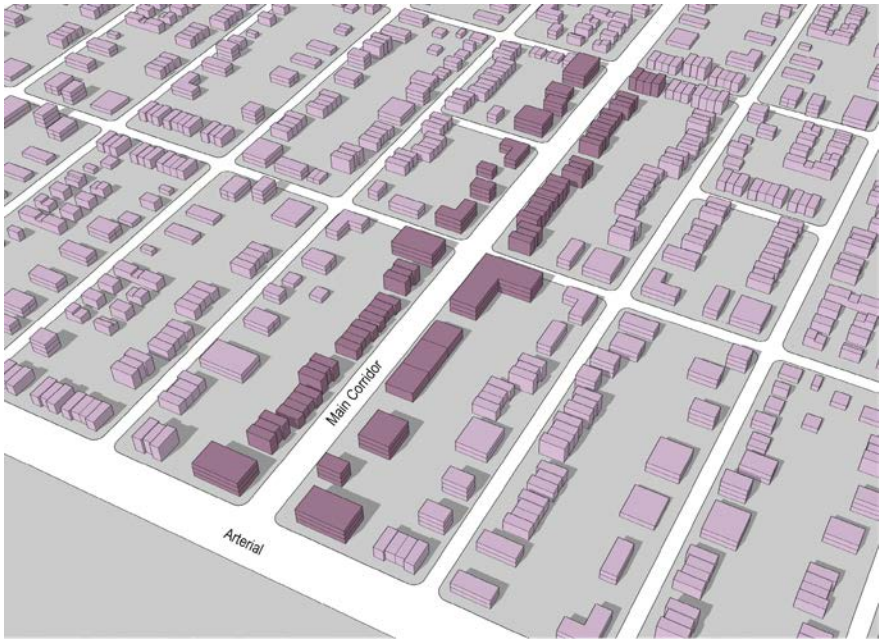
Commercial Nodes

- Distributed along internal corridors
- Emphasized neighborhood-scale commerce like small restaurants and shops

Transportation

- Neighborhood main streets that connect to major streets
- Emphasized internal bicycle and pedestrian networks
- Transit service would be the most flexible, with service possible along major arterial streets or interior corridors

Concept B - 3-D Model



Legend

Commercial / Mixed-use Node

Neighborhood

Concept B - Building Form Profile

Commercial / Mixed-use Node *Neighborhood Edge*

Concept C

Concept C focused on three smaller, internal neighborhood centers that connected outward to major streets. Parks were located near centers and provided connections throughout. The largest housing forms were near the centers with lower-profile housing at the natural edges.

Housing

- Larger and taller mixed-use housing forms near the central "nodes"
- Smaller, lower profile housing forms at the edges

Commercial Nodes

- Smaller internal "nodes" at key intersections
- Most likely small retail and office spaces
- Connected outward to major streets

Transportation

- Maximized walkable access within neighborhoods
- Possibility of internal transit network connecting "nodes"

Concept C - 3-D Model

Legend

Commercial / Mixed-use Node

Neighborhood

Concept C - Building Form Profile

Commercial / Mixed-use Node *Neighborhood Edge*

Selecting a Preferred Alternative

The three concept alternatives were reviewed and evaluated by different stakeholder groups. The goal of these reviews was to receive input from a range of sources to understand which alternative, or which elements within the alternatives, best met community needs and desires. Input was provided from:

- The Community Advisory Committee (CAC)
- An online open house and preference survey, conducted in English and Spanish
- A Spanish focus group
- The Technical Advisory Committee
- City staff representing different departments (Public Works, Engineering, Transportation, Parks, Economic Development)

As feedback was gathered, some clear themes began to emerge that helped shape the preferred alternative.

- Ensuring opportunities for a variety of housing, including affordable housing, was a top concern
- There was less interest in large suburban commercial centers and more interest in smaller-scale commercial nodes internal to the neighborhoods. There was demand for one larger commercial node with potential for a grocery store.
- There is a need for more employment land in River Terrace West to ensure a complete community with balanced opportunities for living and working.
- Walkability and access to parks and open spaces must be part of any new community.
- The street network must be safe and comfortable for pedestrians and not create barriers in the neighborhoods.

The preferred alternative was developed around these themes. Overall, Concept B, the main street corridors concept, was consistently identified as the favorite option by reviewers. While the preferred alternative is based primarily on Concept B, it also blends elements from the other two alternatives, including the larger commercial/employment node in River Terrace West (Concept A) and the internal neighborhood commercial nodes from Concept C.

VI. RIVER TERRACE 2.0 CONCEPT PLAN

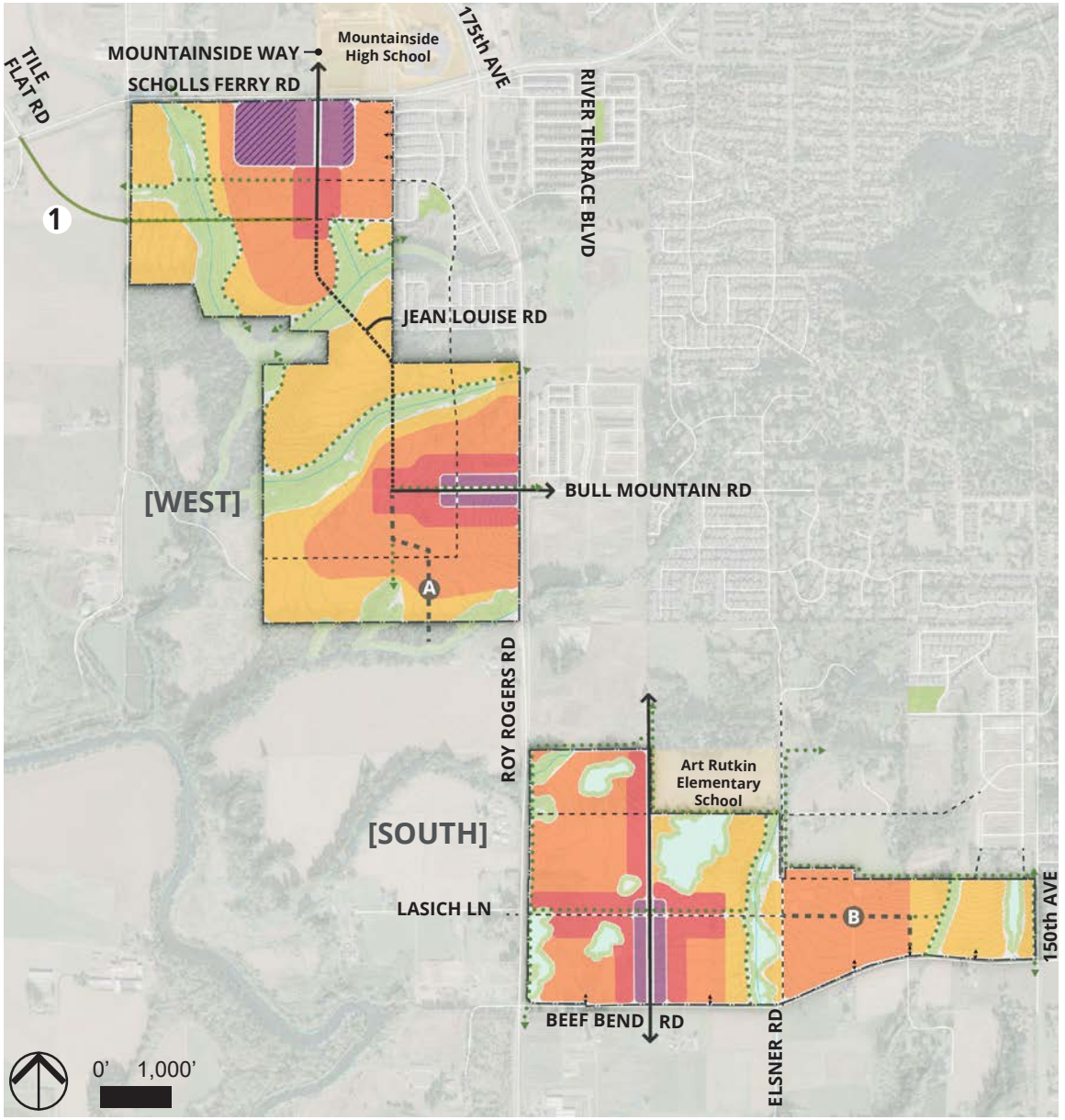
The River Terrace 2.0 Concept Plan offers opportunities for a wide variety of household types and sizes, along with places to shop, work and recreate – all within walkable, well-connected neighborhoods. The concept plan realizes the project vision, guiding principles and community voices that guided this effort.

Legend

- River Terrace 2.0 Project Area
- Employment Area
- Commercial / Neighborhood Node
- Main Street
- Even Mix
- Feathered Edge
- Collector Road
- Street / Pedestrian Connection
- Minor Street Connection
- Mountainside Way Future Study Area
- Beef Bend Road Future Study Area
- Community Connection
- Trail Network
- Stream
- Wetlands
- Vegetated Corridor
- Park (Outside Project Area)
- School (Outside Project Area)

1 Tile Flat, Future Study Area – Framework B, See Transportation Section

Figure 11 - Concept Plan



Commercial / Employment Nodes

Commercial and employment areas are planned for both River Terrace West and South to support the vision for complete communities where people can live, work, shop, and access local services – all within their neighborhood. Each commercial node is located and sized in response to its surroundings and adjacent developments outside the concept plan area.

River Terrace West

There are two commercial nodes planned for River Terrace West: one at the north end along SW Scholls Ferry Road and one near the center at SW Bull Mountain Road.

The node along SW Scholls Ferry Road is the largest and includes a main street commercial corridor along the north-south collector street. The commercial corridor is surrounded by a larger employment node (approximately 10 acres) intended for a mix of office, institutional, technology, and light industrial uses. This commercial/employment node will have visibility and access from SW Scholls Ferry Road. It is planned to provide complementary uses to the South Cooper Mountain main street area that is currently being developed to the north. It is also anticipated that this commercial/employment center could also include apartments.

The node at SW Bull Mountain Road, about four acres, is intended primarily to serve the neighborhoods within River Terrace 2.0 and developing areas across SW Bull Mountain Road in River Terrace East. It would likely also serve some regional traffic, particularly at the edge along Roy Rogers Road. This node is also envisioned as a main street corridor, with neighborhood-scale commercial retail and civic uses along a two or three block segment of the main collector street. While this node is more internal to the neighborhood, it maintains connection to, and visibility from, the major intersection of SW Bull Mountain Road and SW Roy Rogers Road.

River Terrace South

The commercial node in River Terrace South (about five acres) is envisioned as a main street corridor along the north-south extension of River Terrace Boulevard where it meets Beef Bend Road. It is intended to be a neighborhood-serving commercial node, with a mix of retail and civic uses, that has strong connections to Beef Bend Road. The goal here is to design a flexible commercial node that can reflect and complement the Kingston Terrace town center to the south, which is currently being considered through King City's community planning work.

Housing Prototypes

There are three different residential prototypes identified on the Concept Plan: Main Street, Even Mix and Feathered Edge. Each prototype is designed to provide a range of housing options that responds to and reflects adjacent land uses. The types of housing represented in each prototype are similar throughout; the difference is in the proportionate mix of those housing types and the specific forms they take (tall and stacked versus short and spread out, for example). Housing types common to all the prototypes include:

- Single Detached
- ADUs (accessory dwelling units, inclusive of what are often called duplexes and triplexes)
- Cottage Cluster
- Courtyard units
- Quads
- Rowhouses
- Apartments

Affordable housing opportunities are intended to be integrated throughout. More detail about housing prototypes, the number and type of housing units provided, and affordability strategies can be found in Chapter III of this document.

Main Street & Even Mix Prototypes

Main Street

This type is designed to be located near a commercial node or along a main street; it is intended to complement and support a small-scale, neighborhood-serving village center. The Main Street prototype is designed with taller, more urban rowhouses at the ends of the blocks, oriented toward a main street or commercial center. Rowhouses may accommodate live-work space, or an office space on the ground floor. The remainder of the block is comprised of a mix of middle housing types and forms.

Even Mix

This prototype is designed to be located in the middle, between the neighborhood edge and the main street or commercial node. Even Mix developments are comprised of a block-by-block mix of a variety of housing types, including cottage clusters, quads, courtyard units and single detached houses with accessory dwelling units. Housing forms may be in a range of configurations (stacked, attached, detached) and integrate opportunities for rentals and home ownership throughout.

Feathered Edge Prototype

Feathered Edge

The Feathered Edge prototype is intended to respond to the edges where development abuts natural resource and open space areas. Housing types and block configurations in the Feathered Edge areas could take a variety of forms, including:

- Groupings of detached dwellings surrounding a common greenspace and/or terraced down a slope
- Lower profile (shorter and more spread out) forms of housing
- Varied lot sizes and shapes that reflect the variation of natural areas at the edges
- Access from alleys or skinny “woonerfs” to minimize paving and treat stormwater
- Public trails around developments that provide access to the natural areas
- Public street at the edge of the natural area to provide a “promenade” and access to views and trailheads into the natural areas

Feathered Edge Over Three Blocks

Concept Plan Housing Prototypes

River Terrace West

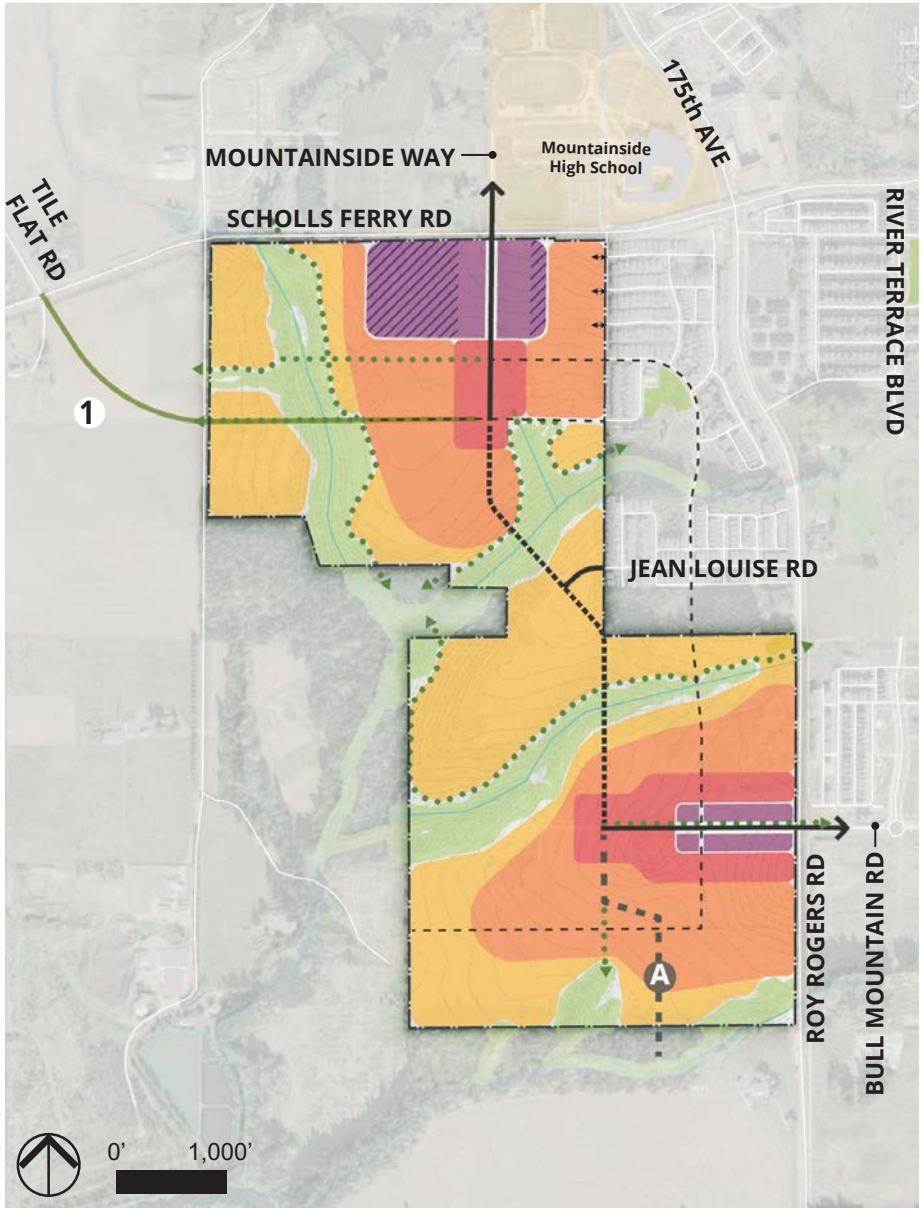
In River Terrace West, there are two Main Street areas: one at the northern end adjacent to the commercial/neighborhood node and one near the center surrounding the main street commercial corridor along Bull Mountain Road. Generally, the Main Street areas are surrounded by Even Mix areas. Due to the presence of natural resources in River Terrace West, there is a significant amount of Feathered Edge throughout.

Legend

- River Terrace 2.0 Project Area
- Employment Area
- Commercial / Neighborhood Node
- Main Street
- Even Mix
- Feathered Edge
- Collector Road
- Street / Pedestrian Connection
- Minor Street Connection
- Mountainside Way Future Study Area
- Community Connection
- Trail Network
- Stream
- Wetlands
- Vegetated Corridor
- Park (Outside Project Area)
- School (Outside Project Area)

1 Tile Flat, Future Study Area – Framework B, See Transportation Section

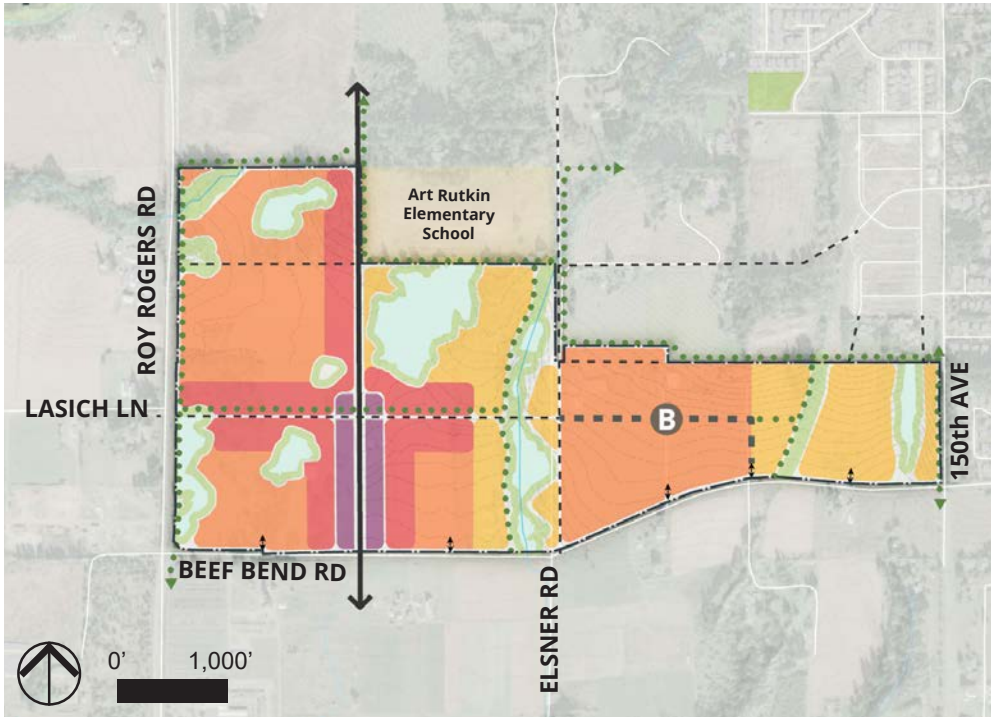
Figure 12 - River Terrace West Housing Prototypes



River Terrace South

In River Terrace South, the Main Street type extends along the north-south collector (River Terrace Boulevard extension), surrounds the commercial corridor, and extends along a segment of major the east-west connection that connects to Roy Rogers Road at Lasich Lane. The remainder of River Terrace South is filled in with Even Mix and Feathered Edge where there are significant wetlands and drainages.

Figure 13 - River Terrace South Housing Prototypes



Legend

- River Terrace 2.0 Project Area
- Commercial / Neighborhood Node
- Main Street
- Even Mix
- Feathered Edge
- Collector Road
- Minor Street Connection
- Beef Bend Road Future Study Area
- Community Connection
- Trail Network
- Stream
- Wetlands
- Vegetated Corridor
- Park (Outside Project Area)
- School (Outside Project Area)

Mobility Network

Streets

Planning for the future street network in River Terrace 2.0 is based on forecasts of travel demand resulting from future population and employment growth, both within the study area and within the larger Tigard and the Metro region. The objective of the transportation planning process is to provide the information necessary for making decisions about how and where improvements should be made to create a connected, safe and efficient transportation system that provides travel options for all users.

For River Terrace 2.0, future traffic forecasts were prepared for the year 2040 for two scenarios:

2040 Transportation System Plan (TSP) Baseline: this assumes the land use and transportation network currently within Washington County's Financially Constrained Regional Travel Demand Model, and the baseline transportation improvements. This scenario includes 2,587 households and 200 employees in the River Terrace West and South Concept Plan area and is assumed to match the forecast of the current Tigard TSP.

2040 with River Terrace West and South growth: this scenario assumes the preferred levels of potential development within River Terrace 2.0, with an estimated 4,541 households and 460 employees. It includes the baseline transportation improvements, in addition to the street extensions envisioned in the Concept Plan study area since they would be needed before development could occur.

Two transportation frameworks were evaluated with the River Terrace West and South Concept Plan growth scenario. These transportation frameworks include various street extensions with associated pedestrian and bicycle facilities, in addition to a trail network that is included under both frameworks.

Transportation Framework A:
This transportation framework assumes that the SW Mountainside Way extension and an improved SW Bull Mountain Road comprise the primary collector route between SW Scholls Ferry Road and SW Roy Rogers Road. Framework A does not include an extension of Tile Flat Road through River Terrace 2.0.

Transportation Framework B:
This transportation framework assumes all of Framework A, but with an extension of SW Tile Flat Road between SW Scholls Ferry Road to the SW Mountainside Way extension (referred to as Project B1 in Table 6). The SW Tile Flat extension, SW Mountainside Way extension and an improved SW Bull Mountain Road are assumed as the primary collector route between SW Scholls Ferry Road and SW Roy Rogers Road in this framework. This option is consistent with Washington County's URTS system connections planning.

The full transportation analysis for River Terrace 2.0 is provided in Appendix E.

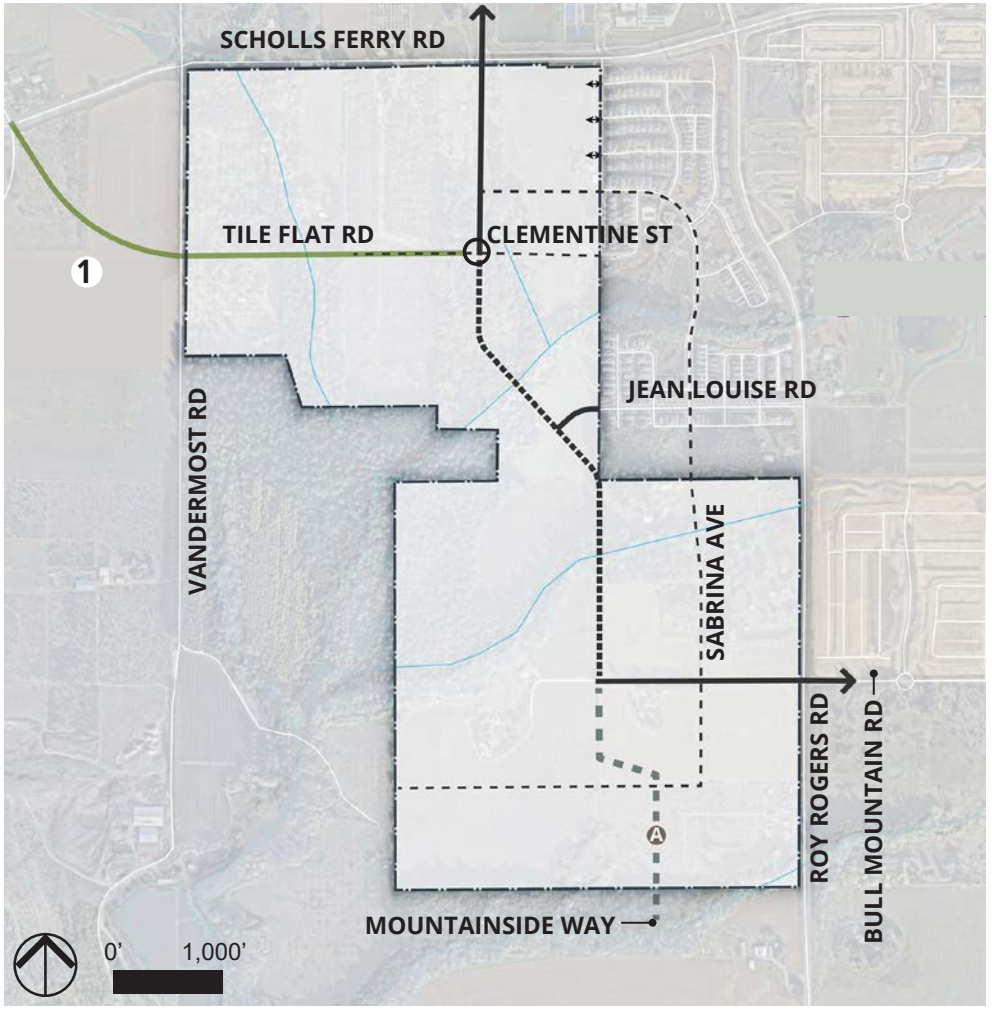
River Terrace West Streets

In River Terrace West, recommended transportation improvements include:

- Under Framework A, SW Mountainside Way would be extended from SW Scholls Ferry Road south into the study area and then east to connect with SW Bull Mountain Road. This plan considers two options for a connection south to Bull Mountain Road: a full connection and a bicycle/pedestrian-only connection. The traffic analysis explored potential impacts under both scenarios, which is explained further on the next page.
- Under Framework B, Tile Flat Road would be extended across SW Scholls Ferry Road east into the study area, to connect with Mountainside Way. In Framework B, it is anticipated, based on input from Washington County, that a roundabout would be constructed at the intersection of Tile Flat Road and Mountainside Way.
- Improve SW Vandermost Road (at the western edge of River Terrace West) as a two-lane City neighborhood route.
- Extend SW Sabrina Avenue from SW Bull Mountain Road to the edge of the study area as a two-lane City neighborhood route.
- Improve SW Bull Mountain Road as a three-lane City collector from SW Roy Rogers Road to the SW Mountainside Way extension.
- Upgrade SW Roy Rogers Road to a five-lane County arterial from SW Bull Mountain Road down to SW Beef Bend Road.

See Table 6 for full description of recommended improvements for River Terrace West.

Figure 14 - Transportation Improvements - River Terrace West



Legend

- River Terrace 2.0 Project Area
- Collector Road
- Street / Pedestrian Connection
- Minor Street Connection
- Mountainside Way Future Study Area
- Stream
- 1 Tile Flat, Future Study Area – Framework B, See Transportation Section
- Potential Roundabout

Tile Flat Road Extension

Traffic modeling conducted for the Transportation Frameworks indicated that the SW Tile Flat Road extension included in Framework B slightly improves operations along the SW Scholls Ferry Road and SW Roy Rogers Road segments adjacent to River Terrace West. This alignment was analyzed as a collector type facility, with a design speed between 25 and 30 miles per hour. With this design, it is forecasted to attract around 200 to 250 vehicle trips in each direction during the p.m. peak hour from the SW Scholls Ferry Road and SW Roy Rogers Road corridors. However, it was found that with the SW Tile Flat Road extension, the associated vehicle trips that would take up the available capacity along this segment would be back-filled with other regional traffic. In other words, future congestion on parallel arterials routes (such as OR 99W) could potentially cause drivers to re-route to SW Roy Rogers Road through the River Terrace West and South Concept Plan area. As such, the traffic operational results were similar between Transportation Frameworks A and B.

SW Mountainside Way Extension

The SW Mountainside Way extension would provide the primary collector route through River Terrace West (without the SW Tile Flat Road extension) and would be the only direct and continuous route for pedestrians and bicyclists through the area with Framework A. However, River Terrace West includes topography and environmental constraints that make street connections difficult and costly. In particular, the area along the SW Mountainside Way extension between SW Clementine Street and SW Bull Mountain Road will require two bridge crossings that would result in an expensive street connection. For that reason, that segment of Mountainside Way is shown as “Street/ Pedestrian Connection” on Figure 14. This indicates the connection could be a full street connection or a bicycle/pedestrian connection only, depending on future planning work and funding.

A sensitivity test was conducted to analyze Framework A without the SW Mountainside Way extension between SW Clementine Street and SW Bull Mountain Road. Overall, not constructing this segment as a full street connection has a negligible impact on nearby intersection operations (i.e., no change in intersection v/c ratios).

Much of the traffic utilizing the SW Mountainside Way extension would instead utilize SW Sabrina Avenue between the northern portion of the SW Mountainside Way extension north of SW Clementine Street and SW Bull Mountain Road. This segment of SW Sabrina Avenue would experience volume increases of up to 100 trips in each direction during the p.m. peak hour. Although this level of traffic is typical for a neighborhood route, this segment was built slightly narrower, with 32 feet of pavement width, and parking on both sides. The typical neighborhood route requires 36 feet of pavement with parking on both sides. This scenario would remove the temporary parking along one side of SW Sabrina Avenue per land use requirements.

The Concept Plan also considers a further extension of Mountainside Way, continuing south past River Terrace 2.0 (shown as “Mountainside Way Future Study Area” on Figure 14). This extension is highly conceptual at this point; it has not been studied and is not included with the cost estimates for transportation improvements. Future planning work will include evaluation of this extension and will determine if it should be studied and included as a project.

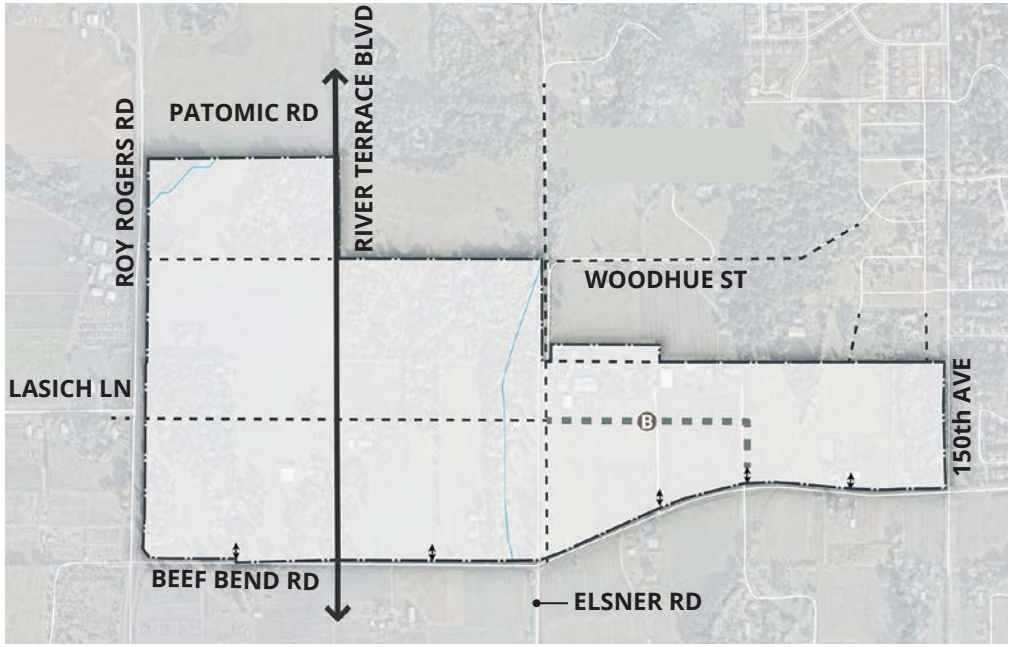
River Terrace South Streets

Recommended transportation improvements in and around River Terrace South include:

- Extend River Terrace Boulevard from SW Potomac Road to SW Beef Bend Road as a three-lane City collector.
- Extend SW Lasich Lane from SW Roy Rogers Road east into the study area as a two-lane City neighborhood route.
- Upgrade SW Beef Bend Road from SW Roy Rogers Road to SW 150th Avenue to a three-lane County arterial standard.
- Multiple intersection improvements, primarily along SW Rogers Road and SW Beef Bend Road, including installation of traffic signals or roundabouts.

A future realignment of Beef Bend Road is also considered with this plan, shown as "Beef Bend Road Future Study Area" on Figure 15. This realignment is conceptual and has not been studied or included with the cost estimate for transportation improvements. Subsequent transportation planning in this area will further consider the Beef Bend Road realignment.

Figure 15 - Transportation Improvements - River Terrace South

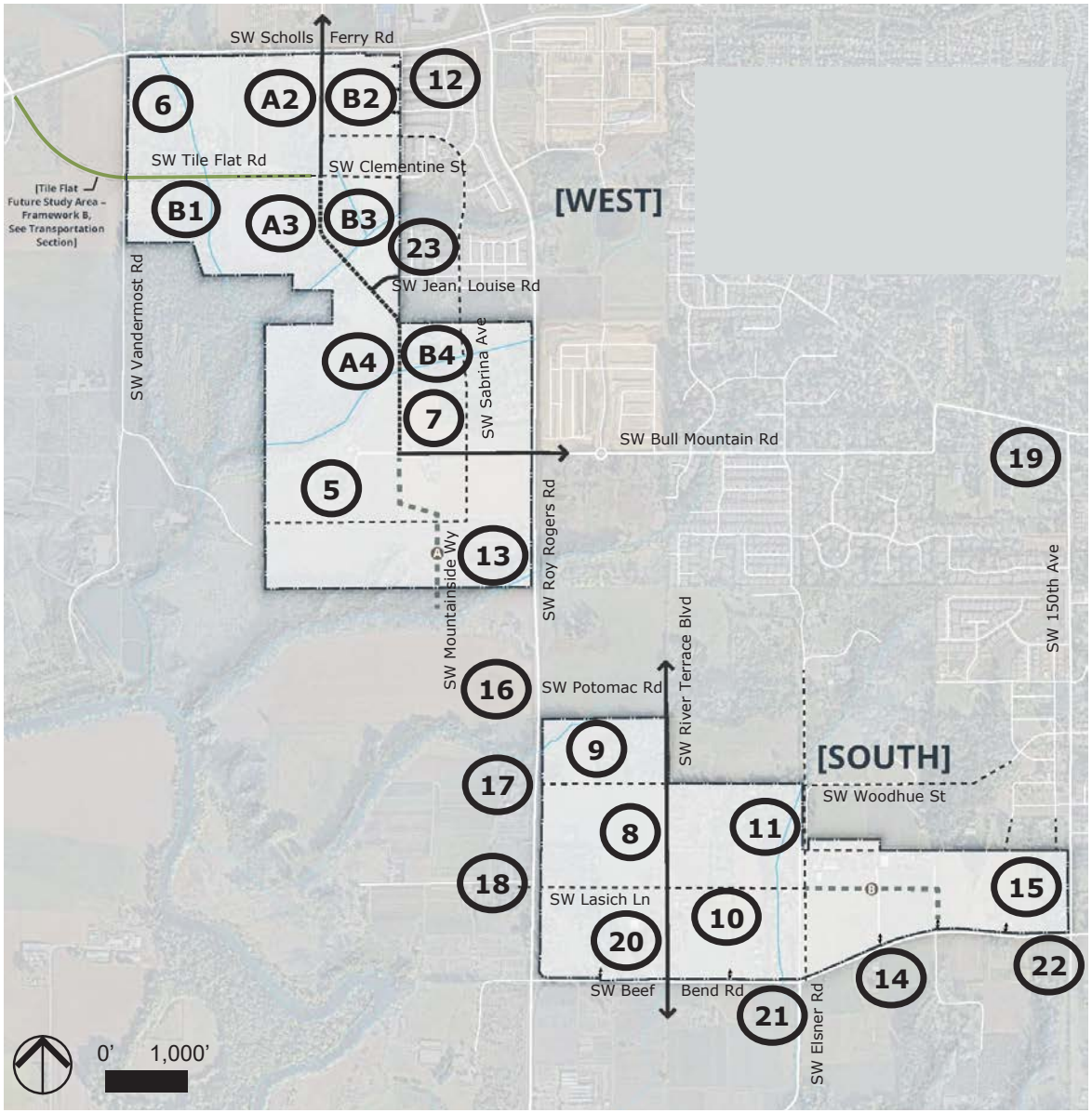


Legend

- River Terrace 2.0 Project Area
- Collector Road
- Street / Pedestrian Connection
- Minor Street Connection
- Beef Bend Road Future Study Area
- Stream

Overall, an estimated $75 to $85 million in transportation system improvements are expected to be needed to support growth planned for River Terrace 2.0 and the surrounding region. Forecasted traffic growth associated specifically with development in the River Terrace West and South Concept Plan area is expected to drive the need for about $34 million worth of the total project costs in Transportation Framework A and $33 million worth of the total project costs in Transportation Framework B. Those costs are nearly an even split between River Terrace West and South. For a full listing and description of recommended improvements and their estimated costs, see Appendix E.

Figure 16 - Transportation Improvements



Legend

- River Terrace 2.0 Project Area
- Collector Road
- Street / Pedestrian Connection
- Minor Street Connection
- Mountainside Way Future Study Area
- Beef Bend Road Future Study Area
- Stream

Table 6 - Recommended Transportation System Improvements

ID	PROJECT DESCRIPTION	TOTAL ESTIMATED COST (2021)	SHARE OF TOTAL PROJECT COST BY AREA		
			RIVER TERRACE WEST SHARE	RIVER TERRACE SOUTH SHARE	REGIONAL TRAFFIC SHARE
Transportation Framework A Projects					
A2	Extend SW Mountainside Way from SW Scholls Ferry Road to west of SW Clementine Street as a 3-lane City collector	**$2,480,000**	$1,990,000	$0	$490,000
A3	Extend SW Mountainside Way from west of SW Clementine Street to the SW Jean Louise Road extension as a 2-lane City collector	**$3,000,000**	$2,860,000	$0	$140,000
A4	Extend SW Mountainside Way from the SW Jean Louise Road extension to the SW Bull Mountain Road extension as a 2-lane City collector	**$3,000,000**	$2,780,000	$0	$220,000
	Subtotals	**$8,480,000**	***$7,630,000***	***$0***	***$850,000***
	Percent share of subtotal cost		***90%***	***0%***	***10%***
Transportation Framework B Projects					
B1	Extend SW Tile Flat Road from SW Scholls Ferry Road to the SW Mountainside Way extension as a 3-lane County collector.	**$7,880,000**	$1,480,000	$130,000	$6,270,000
B2	Extend SW Mountainside Way from SW Scholls Ferry Road to west of SW Clementine Street as a 2-lane City neighborhood route	**$1,970,000**	$1,590,000	$0	$380,000

ID	PROJECT DESCRIPTION	TOTAL ESTIMATED COST (2021)	SHARE OF TOTAL PROJECT COST BY AREA		
			RIVER TERRACE WEST SHARE	RIVER TERRACE SOUTH SHARE	REGIONAL TRAFFIC SHARE
B3	Extend SW Tile Flat Road/ SW Mountainside Way from the SW Mountainside Way extension to the SW Jean Louise Road extension as a 3-lane County collector.	**$4,220,000**	$2,250,000	$30,000	$1,940,000
B4	Extend SW Tile Flat Road/ SW Mountainside Way from the SW Jean Louise Road extension to the SW Bull Mountain Road extension as a 3-lane County collector.	**$4,180,000**	$1,820,000	$20,000	$2,340,000
	Subtotals	**$18,250,000**	***$7,140,000***	***$180,000***	***$10,930,000***
	Percent share of subtotal cost		***39%***	***1%***	***60%***
Projects Constructing or Reconstructing Streets On-site (Transportation Framework A and B)					
5	Extend SW Sabrina Avenue from SW Bull Mountain Road to the West UGB as a 2-lane City neighborhood route	**$4,200,000**	$4,200,000	$0	$0
6	Improve SW Vandermost Road from SW Scholls Ferry Road south to the UGB as a 2-lane City neighborhood route	**$1,220,000**	$1,220,000	$0	$0
7	Improve SW Bull Mountain Road from SW Roy Rogers Road to the SW Mountainside Way extension as a 3-lane City collector	**$2,360,000**	$2,150,000	$10,000	$200,000
8	Extend SW River Terrace Boulevard from SW Potomac Road to SW Beef Bend Road as a 3-lane City collector	**$5,580,000**	$0	$2,720,000	$2,860,000
9	Extend SW Woodhue Street west from the UGB to SW Roy Rogers Road as a 2-lane City neighborhood route	**$4,130,000**	$0	$4,020,000	$110,000
10	Extend SW Lasich Lane from SW Roy Rogers Road to SW Beef Bend Road as a 2-lane City neighborhood route	**$6,820,000**	$0	$6,640,000	$180,000

ID	PROJECT DESCRIPTION	TOTAL ESTIMATED COST (2021)	SHARE OF TOTAL PROJECT COST BY AREA		
			RIVER TERRACE WEST SHARE	RIVER TERRACE SOUTH SHARE	REGIONAL TRAFFIC SHARE
11	Extend SW Elsner Road from SW Beef Bend Road to the SW Woodhue Street Extension as a 2-lane City neighborhood route	**$3,130,000**	$0	$1,780,000	$1,350,000
23	Extend SW Jean Louise Road west to the SW Tile Flat Road/ SW Mountainside Way extension as a 2-lane City collector	**$460,000**	$120,000	$0	$340,000
	Subtotals	**$27,900,000**	***$7,690,000***	***$15,170,000***	***$5,040,000***
	Percent share of subtotal cost		***28%***	***54%***	***18%***
Projects Upgrading Existing Streets to Urban Standards (Transportation Framework A and B)					
12	Improve SW Scholls Ferry Road from SW Roy Rogers Road to SW Tile Flat Road as a 5-lane County arterial	**$8,300,000**	$1,040,000	$40,000	$7,220,000
13	Improve SW Roy Rogers Road from SW Bull Mountain Road to SW Beef Bend Road as a 5-lane County arterial	**$13,150,000**	$400,000	$70,000	$12,680,000
14	Improve SW Beef Bend Road from SW Roy Rogers Road to 150th Avenue as a 3-lane County arterial	**$10,470,000**	$50,000	$850,000	$9,570,000
15	Improve SW 150th Avenue from SW Beef Bend Road to SW Rosario Lane as a 3-lane City collector	**$1,290,000**	$20,000	$90,000	$1,180,000
	Subtotals	**$33,210,000**	***$1,510,000***	***$1,050,000***	***$30,650,000***
	Percent share of subtotal cost		***5%***	***3%***	***92%***
Projects Improving Intersections (Transportation Framework A and B)					
16	Improve the SW Roy Rogers Road intersection with SW Potomac Road by installing a traffic signal (when warrants are met)	**$500,000**	$20,000	$20,000	$460,000
17	Improve the SW Roy Rogers Road intersection with the SW Woodhue Street extension by installing a traffic signal (when warrants are met)	**$500,000**	$10,000	$30,000	$460,000

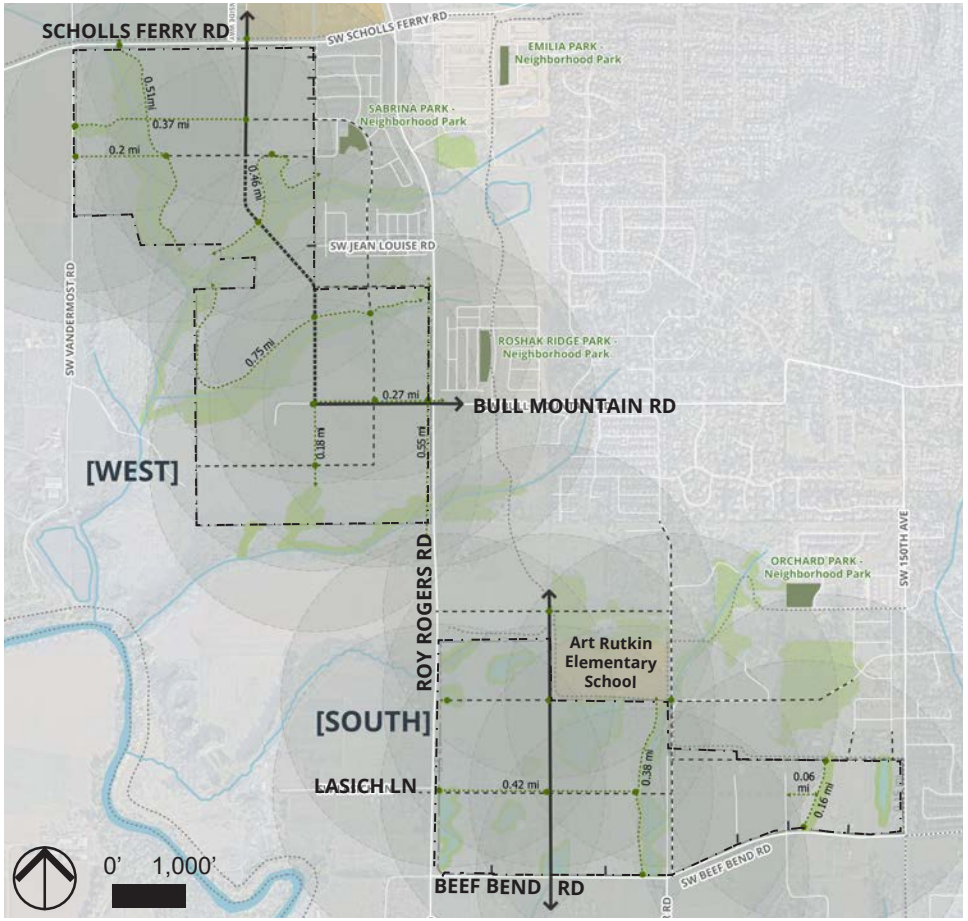
ID	PROJECT DESCRIPTION	TOTAL ESTIMATED COST (2021)	SHARE OF TOTAL PROJECT COST BY AREA		
			RIVER TERRACE WEST SHARE	RIVER TERRACE SOUTH SHARE	REGIONAL TRAFFIC SHARE
18	Improve the SW Roy Rogers Road intersection with SW Lasich Lane by installing a traffic signal (when warrants are met)	**$500,000**	$10,000	$30,000	$460,000
19	Improve the SW Bull Mountain Road intersection with SW 150th Avenue by adding an eastbound right-turn lane	**$470,000**	$40,000	$10,000	$420,000
20	Improve the SW Beef Bend Road intersection with SW River Terrace Boulevard by adding a traffic signal or roundabout (cost assumes roundabout)	**$1,280,000**	$40,000	$100,000	$1,140,000
21	Improve the SW Beef Bend Road intersection with SW Elsner Road by adding a traffic signal or roundabout (cost assumes roundabout)	**$1,280,000**	$30,000	$260,000	$990,000
22	Improve the SW Beef Bend Road intersection with SW 150th Avenue by adding a traffic signal or roundabout (cost assumes roundabout)	**$1,280,000**	$10,000	$140,000	$1,130,000
	Subtotals	**$5,810,000**	***$160,000***	***$590,000***	***$5,060,000***
	Percent share of subtotal cost		***3%***	***10%***	***87%***
	Total Cost of Recommended Improvements with Transportation Framework A	**$75,400,000**	***$16,990,000***	***$16,810,000***	***$41,600,000***
	Percent share of total cost		***23%***	***22%***	***55%***
	Total Cost of Recommended Improvements with Transportation Framework B	**$85,170,000**	***$16,500,000***	***$16,990,000***	***$51,680,000***
	Percent share of total cost		***19%***	***20%***	***61%***

Trails

The conceptual trails shown in Figure 17 would provide a network of active transportation opportunities. Smaller, neighborhood trails could connect residents in the feathered edges and even mix areas to the main routes and commercial corridors, with connections to parks for both passive and active recreation along the way. Multi-use community trails along the main roadways would provide connections between the neighborhood centers, community parks, and neighboring communities. These trails would also provide connections to the regional trail system with future connections to the River Terrace Trail, Roy Rogers Road Trail, and SW 150th Avenue Trail.

Trail Examples

Figure 17 - Proposed Trails



Legend

- River Terrace 2.0 Project Area
- Trail Network
- Trail Access Points (Conceptual)
- Trail Access Service Area (1/2 mi)
- Proposed Trail
- Stream
- Wetlands
- Vegetated Corridor
- Park (Outside Project Area)
- School (Outside Project Area)
- Collector Road
- Street / Pedestrian Connection
- Minor Street Connection
- Community Connection

For planning purposes, service areas are shown as a radius instead of along a street / trail network

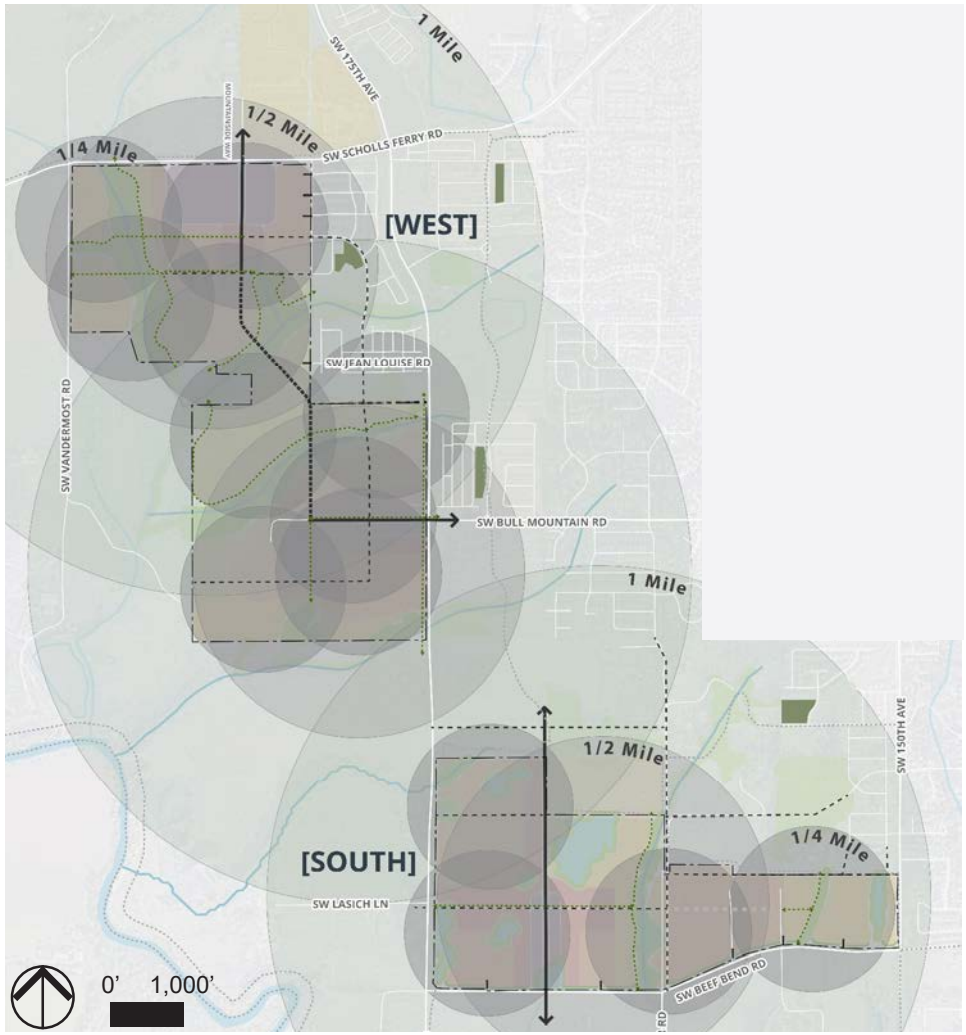
Parks & Open Spaces

A preliminary look at service areas for community, neighborhood, and linear parks of River Terrace 2.0 is shown in Figure 18. These locations are conceptual to assess potential coverage of park service. Actual locations of parks and open space facilities will be determined on an ongoing basis as infrastructure networks are further defined and as development occurs. Service areas and access would usually be based on street, sidewalk, and trail networks without barriers. For planning purposes and in absence of a full street network, the service areas are shown as a radius. Community Parks are shown with a 1-mile service area and neighborhood and linear parks are shown with a ¼-mile service area. A ½-mile radius was also added to community parks to understand the 10-minute walk service areas.

Legend

- River Terrace 2.0 Project Area
- Trail Network
- Proposed Trail
- Stream
- Wetlands
- Vegetated Corridor
- Park (Outside Project Area)
- School (Outside Project Area)
- Collector Road
- Street / Pedestrian Connection
- Minor Street Connection
- Community Connection

Figure 18 - Proposed Parks



Park Service Area Legend

- Community Park: 1 mile
- Community Park: 1/2 mile
- Neighborhood & Linear Park: 1/4 mile

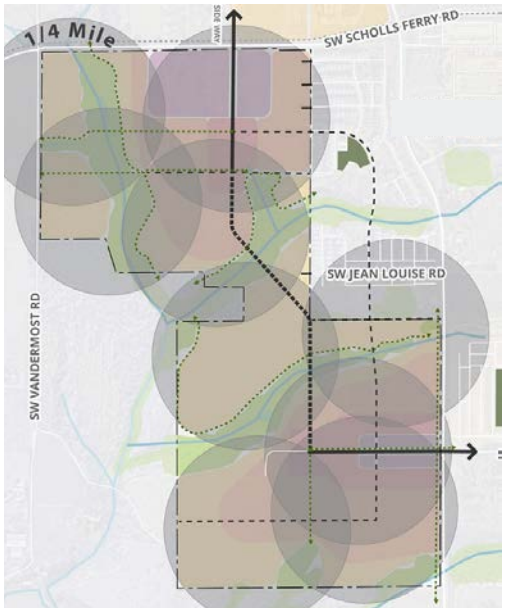
For planning purposes, service areas are shown as a radius instead of along a street / trail network

River Terrace West

The preliminary approach to parks, trails and open space in River Terrace Wests anticipates:

- Two community parks, one in the upper section and one in the lower section. The ½ mile service area (10-minute walk) for these parks would cover almost the entire River Terrace West area, with the exception of a small portion of the neighborhood in the center. That neighborhood would still have access to (and be within one mile of) both community parks via the planned north-south connection (multi-use path or roadway).
- Four neighborhood parks, two in the upper section and two in the lower section. These parks would be in the range of two to four acres in size and would generally overlap with the community park service areas, providing additional park options for residents in those neighborhoods.
- Four linear parks, evenly divided between the upper and lower sections of River Terrace West. Linear parks are envisioned to be located near the commercial centers of each area and along the natural resource corridors.

West Community Parks



West Neighborhood & Linear Parks

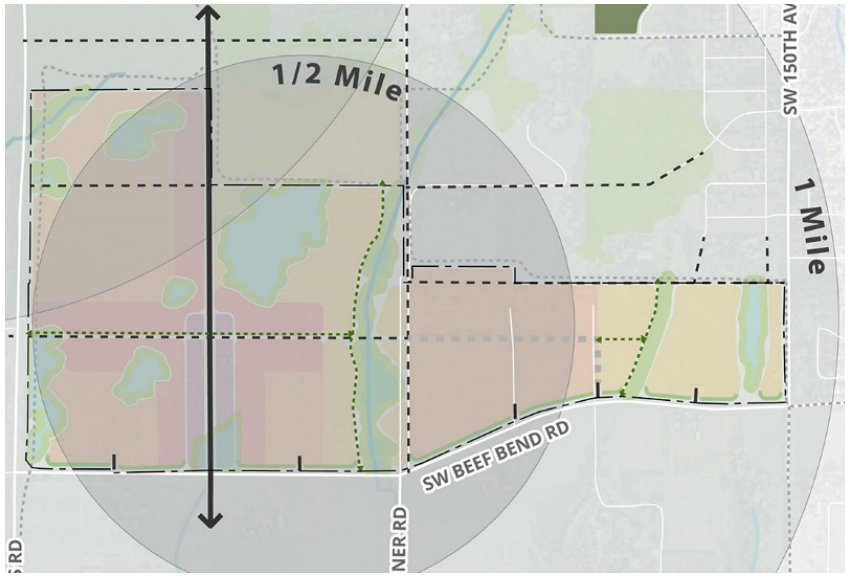

Community Park Examples

River Terrace South

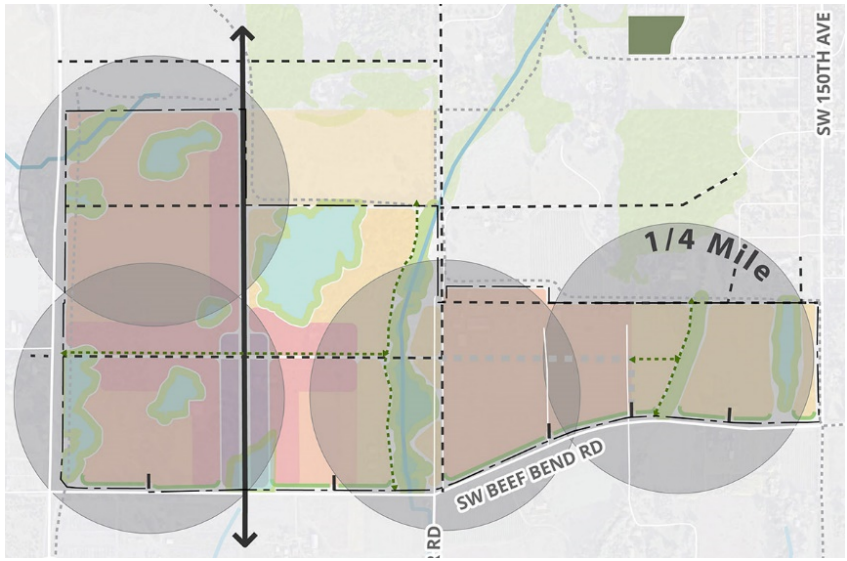
The preliminary River Terrace South combination of parks anticipates:

- One centrally located community park, about 13-15 acres, providing 10-minute walk service to the majority of River Terrace South. With trail connections, this park could be easily walkable from open space areas, providing both passive and active recreation choices in close proximity to each other.
- Two neighborhood parks providing ¼ mile service to the western half of the area. Each park is envisioned to be about three acres and provide opportunities to connect to natural areas and nearby trails.
- Two linear parks providing service to the eastern half of River Terrace South, located along greenway corridors. These parks would allow opportunities to connect across the corridors and link with major routes and future regional trails such as the Tualatin River Greenway Trail.

Neighborhood Park Examples



South Community Parks



South Neighborhood & Linear Parks

Land Use Association (Locate within or adjacent to)						
Park Type	**Employment Area**	**Even Mix Prototype**	**Main Street Prototype**	**Feathered Edge Prototype**	**Commercial / Neighborhood Center**	**Notes**
Community Park	✓	✓	✓		✓	Served by arterial street with shared parking & retail nearby
Neighborhood Park		✓		✓		Could include dog parks
Neighborhood Park – Urban	✓		✓		✓	Urban plaza or town square
Pocket Park		✓	✓	✓		Neighborhood-serving. Limited use due to size
Linear Park	✓		✓	✓		Contains elements of other park types, often follow streets or natural corridors
Trail	✓	✓	✓	✓	✓	Connections to all land use types
Open Space				✓		May also connect with any land use

Table 7 - Parks Land Use Association

Public Utilities & Services

Sanitary Sewer Service

The proposed sanitary sewer infrastructure needed to serve River Terrace West and South is based on the infrastructure assumed to be constructed at the time of development and does not account for connections of adjacent areas to the River Terrace areas. These recommendations consider previous feasibility studies and recommendations as well as the applicable standards and strategic planning guidelines. The proposed sanitary sewer infrastructure may be refined as connected service areas are more readily defined and provide guidance to sewer service for River Terrace West and South. For a detailed discussion of sanitary sewer infrastructure, see Appendix G.

River Terrace West

For the purposes of sanitary sewer discussion, River Terrace West is divided into upper and lower sections, as indicated in Figure 19.

For the upper section, flows from developable land generated in that area were assumed to be conveyed to the River Terrace North pump station via gravity service and connection to the 24-inch sewer trunk that bisects the main development area. The main development and commercial areas in upper River Terrace West are assumed to connect into the 24-inch sewer trunk via a single 10-inch sanitary sewer collector. This project assumes 500 feet of 10-inch gravity sewer to provide service for most of the area.

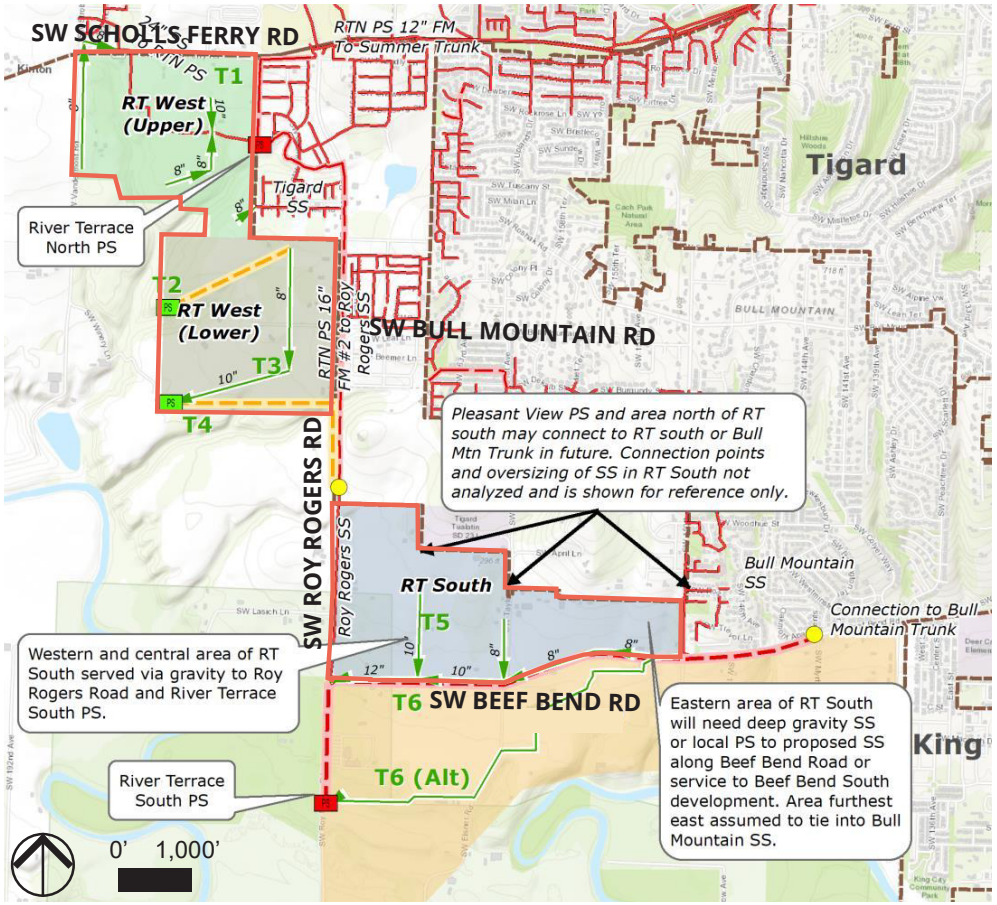
Due to topography, flows generated in lower River Terrace West cannot be conveyed to existing sewer infrastructure by gravity. Flows will need to be pumped to Roy Rogers Road to connect into the existing CWS infrastructure to flow via gravity to the River Terrace South pump station. Sewers within the service area would convey flow to the southwest corner of the service area to the new pump station. Several projects are recommended for sewer service in lower River Terrace West, including two new pump stations (shown as T2 and T4 on Figure 19 and approximately 500 feet of a 10-inch gravity sewer to provide service to the new T4 pump station.

River Terrace South

A majority of the flows in the west and central areas of River Terrace South can be conveyed directly via gravity to Roy Rogers Road and then to the River Terrace South pump station, with topographic limitations for service to the developable areas in the eastern edge of the basin. Recommended projects for River Terrace South include new gravity sewer lines to serve the area, including 2,600 feet of new 10-inch and 12-inch lines along Beef Bend Road to connect to Roy Rogers Road at the western edge of the plan area.

An alternative collector sewer has been proposed for the Kingston Terrace area near the Tualatin River to convey flows from that area to the River Terrace South pump station. This collector sewer could provide more efficient service for portions of the River Terrace South area and provide an opportunity to share costs across a larger area. This alternative has been discussed as part of recommended future analyses. Further coordination with King City and CWS will be required.

Figure 19 - Recommended Sewer Service



Cost estimates for each project are provided in Table 8. These do not include acquisition costs or local gravity collection system from development and are assumed to provide a backbone of sewer (10-in diameter and greater) needed to connect to existing or planned infrastructure. It was assumed that road resurfacing and other costs may be shared where utilities are co-located.

Table 8 - Preliminary Sewer Service Cost

Project Description	Cost
T1 - River Terrace West (Upper) - 10-in Sanitary Sewer Collector to 24-in Trunk	$90,000
T2 - River Terrace West (Lower) - Pump Station Service to Local Collector	$924,000
T3 - River Terrace West (Lower) - 10-in Sanitary Sewer Collector to River Terrace West (Lower) Pump Station	$261,000
T4 - River Terrace West (Lower) - Pump Station Service to 24-in Gravity Sanitary Sewer on Roy Rogers Road	$1,549,000
T5 - River Terrace South - 10-in Sanitary Sewer Collector to Sanitary Sewer Collector along Beef Bend Road	$157,000
T6 - River Terrace South - 10-in and 12-in Sanitary Sewer Collector along Beef Bend Road to Roy Rogers Road	$469,000
Total Construction Cost Estimate (Including 30% Contingency)	**$4,485,000**
Oregon Corporate Activity Tax	$45,000
20% Engineering Allowance	$897,000
10% Permitting, Inspections, and Administration	$449,000
Total Project Cost Estimate	**$5,876,000**

Notes:

1. Costs are in 2021 Dollars, indexed to the Engineering News - Record (ENR) Construction Cost Index (CCI) of 12,845.38 for Seattle, Washington (January 2021).
2. Does not include property acquisition costs.
3. T6 (Alt) not costed. This project identified as an alternative and will require additional coordination with King City as part of Beef Bend South Development.

Water Service

Infrastructure needs for water service were determined using a combination of planning criteria and a water system hydraulic model. Planning criteria were used to size future storage reservoirs, pump stations, and distribution mains. These facilities were added to the existing system hydraulic model along with the projected demands to verify adequate pressures, flows, and reservoir turnover.

For the Concept Plan area as a whole (River Terrace West and South together), the draft 2020 Water System Master Plan (WSMP) indicates an eventual need for additional storage capacity to serve future development in River Terrace 2.0 and King City's Kingston Terrace expansion area. Several new reservoirs are recommended in the WSMP, although the precise location of those reservoirs has yet to be determined.

River Terrace West

A large diameter (16-inch) backbone main is proposed to extend west along Scholls Ferry Road and then south along the new north-south collector street through River Terrace West. The backbone main will supply smaller mains (8- to 12-inch diameter) that branch off and connect to customer service lines. For the purpose of this concept planning effort, only backbone mains are identified.

River Terrace South

To serve the River Terrace South area, a 16-inch backbone main is proposed to connect a planned main in the SW River Terrace Boulevard alignment that extends south to Beef Bend Road, then east to connect to the proposed River Terrace main at SW Taylor Road. The backbone main will supply the smaller mains that branch out to customer service lines.

Cost estimates for water service improvements are provided in Tables 9 and 10. **The cost of reservoirs does not include property acquisition costs** and assumes 2,000 linear feet of pipe will be needed to connect to existing distribution mains.

The full water utility analysis can be found in Appendix H.

Table 9 - Water Reservoir Cost

Item	Item Description	Estimated Project Cost
1	Reservoir Structure & Appurtenances	$2,580,000
2	Reservoir Foundation and Excavation	$320,000
3	Yard Piping	$288,000
4	Site Work and Landscaping	$180,000
5	Electrical and I&C	$50,000
6	2,000 LF of 16-inch diameter pipe	$238,000
7	2,000 LF of Surface Replacement	$128,000
8	Mobilization, Bonds, Insurance, Shop Drawings	$303,000
9	30% Contingency	$1,227,000
	Total Construction Cost Estimate	***$5,314,000***
10	Oregon Corporate Activity Tax	$54,000
11	20% Engineering Allowance	$1,063,000
12	5% Permitting, Inspections, and Administration	$266,000
	Total Project Cost Estimate	**$6,697,000**

Notes:

1. Costs are in 2021 Dollars
2. AWWA D110 prestressed circular concrete reservoir
3. No property acquisition costs
4. No easement or right-of-way costs
5. Sales tax included as separate line item
6. Project will require local roadway resurfacing
7. Engineering News - Record (ENR) Construction Cost Index (CCI) of 12,845.38 for Seattle, Washington (January 2021)

Table 10 - Water Backbone Pipe Cost

Item	Item Description	Estimated Project Cost
1	RT West 410 PZ - 7,320 LF of 16-inch DI Pipe	$871,000
2	RT West 560 PZ - 5,100 LF of 16-inch DI Pipe	$932,000
3	RT South - 4,590 LF of 16-inch DI Pipe	$546,000
4	Mobilization, Bonds, Insurance, Shop Drawings	$70,000
5	30% Contingency	$726,000
	Total Construction Cost Estimate	***$3,145,000***
6	Oregon Corporate Activity Tax	$32,000
7	20% Engineering Allowance	$629,000
8	5% Permitting, Inspections, and Administration	$158,000
	Total Project Cost Estimate	**$3,964,000**

Notes:

1. Costs are in 2021 Dollars
2. No property acquisition costs
3. No easement or right-of-way costs
4. Sales tax included as separate line item
5. Assumes street resurfacing only needed for 560 PZ
6. Engineering News - Record (ENR) Construction Cost Index (CCI) of 12,845.38 for Seattle, Washington (January 2021)

Stormwater Management

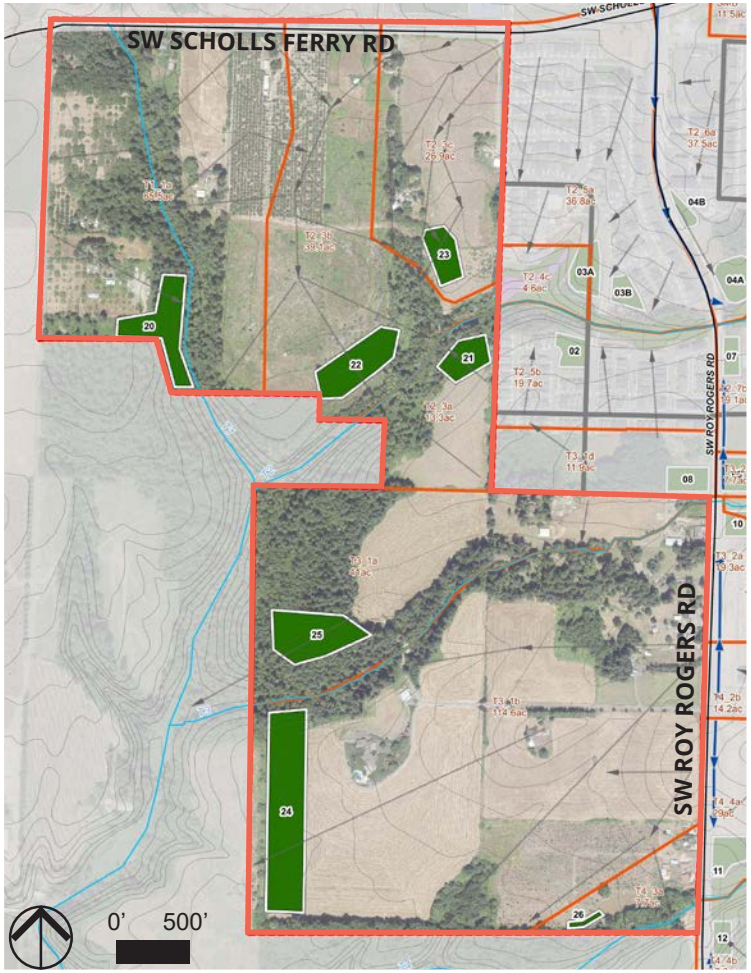
For management of stormwater in River Terrace 2.0, a blend of strategies is proposed that includes combined regional facilities and smaller-scale low impact development (LID) approaches. Regional facilities are recommended to be co-located within existing wetland areas and would be designed to provide restoration and enhancement of the wetlands.

In general, conveyance of stormwater runoff throughout the River Terrace 2.0 planning area is assumed to follow closely with the street, trail, and public right-of-way network. That level of detail is not available with the current concept plan. Conveyance paths will need to be further described by future planning and design efforts and may result in the changes to future drainage basin boundaries assumed for this plan.

River Terrace West

In River Terrace West, proposed storm management for both water quality and quantity (storage) is comprised of seven regional facilities of varying sizes. The size of proposed facilities is based on the estimated acreage of impervious area that is anticipated to drain to that facility. Regional facilities are recommended consistent with stormwater policies and standards developed during planning for River Terrace 1.0. Generally, stormwater management in this area is required to achieve a higher standard than the baseline standard required by Clean Water Services. Per the River Terrace 1.0 adopted standards, regional storm facilities are required to be above ground and include amenities so they serve multiple functions and provide public benefit.

Figure 20 - Stormwater Concept Plan Diagram West



River Terrace South

Stormwater management in this area is proposed to be a combination of four regional water quantity detention facilities and smaller-scale LID facilities that will drain into those facilities. There are also three proposed regional facilities that will provide both water quantity and water quality management.

The four regional detention facilities are co-located within existing wetland areas to preserve and increase existing storage capacities. Stormwater facility design in those areas would include wetland restoration and enhancement activities. Infiltration in River Terrace South appears to have good potential, which supports the use of LID approaches in that area.

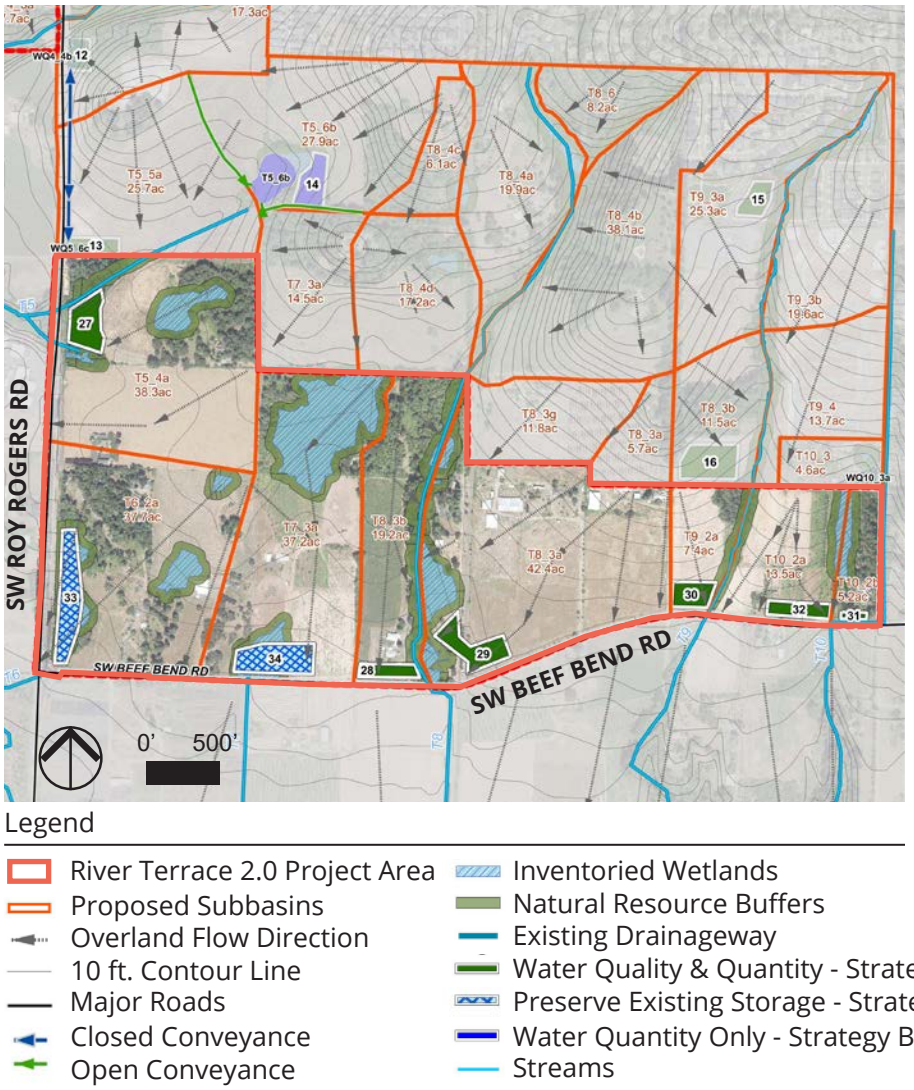
The full stormwater management report can be found in Appendix I.

High level cost estimates for proposed stormwater management facilities are provided in Table 11 below. Storm sewer and LID facilities applied at the site, street, and neighborhood scale are not regional facilities and are not included in the cost estimate. It is expected that these conveyance and water quality facilities will be constructed and paid for by development as individual streets and/or sites are developed.

LOCATION	TOTAL
Construction	$17,525,371
Engineering/Permitting	$8,762,685
Land Acquisition	$7,271,409
TOTAL	**$33,559,465**

Table 11 - Stormwater Infrastructure Cost

Figure 21 - Stormwater Concept Plan Diagram South



VII. IMPLEMENTATION CONSIDERATIONS

Infrastructure Costs

The evaluation of infrastructure services for River Terrace 2.0 included preliminary identification of needed improvement projects and their associated costs. Each of the public infrastructure analyses conducted for this project included a project list and associated high-level cost estimates.
These cost estimates were combined and used to prepare the Funding Strategy summarized below. The full Funding Strategy is provided in Appendix J.

As shown in Table 12, the total cost of infrastructure to serve River Terrace 2.0 is estimated to be $170 million. This table does not include the cost to build out the local street network or provide local service connections; those costs will be born by the developers of future projects within the Concept Plan area.

Table 12 - Infrastructure Costs

Infrastructure Type	Estimated Total Cost
Water Service	$10,661,000
Sanitary Sewer Service	$5,876,000
Stormwater Management	$33,559,465
Parks & Trails	$35,534,426
Transportation	$75,400,000
Tile Flat Road Extension (Framework B)	$9,770,000
Total	**$170,800,891**

Funding Sources & Strategies

Transportation

Funding for transportation improvements depends on the scale of improvement and the size of the area it is intend to serve. For the purpose of evaluating funding, transportation improvements are grouped into three categories: developer-built projects, district projects and major projects.

Developer built projects are localized projects - their size (e.g., right of way width) is no larger than that required as a condition of approval, and they do not require any unusually costly components, such as a bridge. Developers are expected to pay the total cost of all local projects out of pocket.

District projects have an "oversize" component; they either have a wider right of way (and therefore greater cost of construction, land, and other costs), more expensive design features, or a special feature such as a bridge. For district projects, developers are also expected to pay the total cost of all projects. The Funding Strategy recommends an area-specific, River Terrace 2.0 transportation supplemental fee be put in place to cover local oversize costs. This is comparable to the approach taken in River Terrace 1.0, where transportation system development charges (SDCs) are higher than those in the rest of the City in order to pay for district-wide infrastructure. The additional transportation charges to developers of River Terrace 2.0 are referred to here as a supplemental fee, as the methodology used to calculate SDCs may vary from a supplemental fee. Developers who make district/oversized infrastructure improvements would receive credits against the River Terrace supplemental fees, and therefore would pay lower (or sometimes no) supplemental fees.

Major projects are all within right of way controlled by Washington County. On average, transportation demand (trips) generated by River Terrace 2.0 will make up about nine percent of all trips in these arterial roads and intersections; the remaining transportation demand will come from travelers from around the County and perhaps beyond. Table 14 (taken from the Funding Strategy) compares the estimated costs of the major infrastructure associated with River Terrace 2.0 with the two main transportation fees that will be generated by development in River Terrace 2.0: the Washington County Transportation Development Tax (TDT) and existing City of Tigard transportation SDC.

The area-specific supplemental fee is not shown here since revenues and expenses associated with this fee are expected to remain within River Terrace 2.0. As shown, the transportation fees to be generated are about $24 million greater than the cost of the major infrastructure, even though River Terrace 2.0 will make up a small amount of the trips on these roads.

This comparison is made for informational purposes only. The fees generated by River Terrace 2.0 will not directly pay for the major infrastructure, but rather, will be directed to the two agencies, which have a plan to divide the costs of certain infrastructure and build it over time.

Table 13 - Comparison of Major Infrastructure Costs and Transportation Fees

Revenue: Transportation Fees Generated by RT 2.0	
Washington County TDT	$31,233,397
Tigard TSDC (Base)	$20,665,216
Total	**$51,898,613**
Cost of Major Infrastructure	
MSTIP Bonding	
Cost-Sharing Program	**$27,260,000**
Surplus or Deficit	**$24,638,613**

Parks

Funding for parks and trails development in River Terrace 2.0 could come from a variety of sources. Some park improvements (primarily trails) will be paid for a built by developers. The Funding Strategy estimates that approximately $35 million in parks improvements will need to be funded outside of what will be provided through the development process. The primary source for funding is the City's SDCs, which will pay for about 90 percent of future parks in River Terrace 2.0.

See table below from the Funding Strategy. The strategy also assumes a certain amount of grant money will be secured to pay for parks, similar to the approach used in River Terrace 1.0. The strategy also assumes cost reductions will be achieved and some other funding sources will be made available to cover the total cost of parks and trails.

Table 14 - Parks Funding Sources

Funding Source	Assumptions	Amount
Parks SDC	90% of SDCs generated within RT 2.0 are dedicated to RT 2.0	$32,089,336
Grants	Based on RT 1.0 Funding Plan, plus escalation	$1,200,000
Cost Reductions	Due to lower costs of privately built parks, design refinements, and/or value engineering, completed during RT 2.0 Community Plan and/or project build out.	$2,245,090
Other	Other regional, state, or city sources; see below.	-
Total		**$35,534,426**

Stormwater

For stormwater facilities, the Funding Strategy considers two funding approaches. One assumes that each regional stormwater facility identified for River Terrace 2.0 will serve a relatively small group of property owners; therefore, those property owners/developers can be required to take on all of the associated capital costs. Some facilities may be built by individual property owners. Others may be built via a cost-sharing agreement by multiple property owners. Still others could be built by one or more "early-in" developers who set up a reimbursement district that later-in developers must contribute to. In any case, this approach does not assume any City or public funding.

The second scenario assumes a more assertive, pro-development approach by the City and/or Clean Water Services (CWS). The City recently completed a Stormwater Master Plan. Following on that plan, the City raised its stormwater surcharge to fund a range of enhanced stormwater management efforts. The City could allocate money from the Stormwater Fund to build one or more regional stormwater facilities. The City would then create reimbursement districts to be reimbursed in part or in full as development occurs.

The City could also opt to utilize the CWS Regional Stormwater Management Charge (RMSC) program. This option will be available because the city will ask CWS to approve the River Terrace 2.0 stormwater strategy as an approved "sub-basin strategy." In this scenario, CWS could build multiple stormwater facilities, serving some or all of River Terrace 2.0, and then be reimbursed by developers via a (RSMC, similar to a reimbursement fee or SDC. An RSMC is currently being charged in North Bethany and CWS is considering applying the approach elsewhere.
This CWS-led approach should benefit the City and developers, as both the City and developers would take on less financial risk. While some developers could pay more on a per-door basis for stormwater management, the approach will appeal to many developers because the cost will be known and fixed in advance rather than unpredictable, variable, and potentially large; and they will not have to initiate and pay for regional detention facilities.

Sanitary sewer

CWS is the sanitary sewer service provider for the River Terrace area and funds projects for gravity sewer lines that are larger than 12 inches in diameter. The River Terrace 1.0 Funding Strategy proposed that the CWS Capital Fund provide a majority of sanitary sewer funding, and in particular, funding for force mains and pump stations.

The City has responsibility for maintaining gravity lines under 24 inches in diameter; and developers built and paid for 10- and 12-inch lines. The funding allocation identified for River Terrace 2.0 is a continuation of the City's approach in River Terrace 1.0.

This funding analysis assumes that CWS pays for most of the sanitary sewer costs in River Terrace 2.0. CWS will generate significant funds from River Terrace 2.0, primarily via its Sewer Construction SDC. Developers will pay for the remainder of costs, associated with collector lines. See table below from the Funding Strategy.

Table 15 - Sanitary Sewer Projects and Costs

Lead Agency and Project	Total
Clean Water Services	
T2 - River Terrace West (Lower) - Pump Station Service to Local Collector	$1,561,640
T4 - River Terrace West (Lower) - Pump Station Service to 24-in Gravity Sanitary Sewer on Roy Rogers Road	$2,617,840
Subtotal	**$4,179,480**
Developers	
T1 - River Terrace West (Upper) - 10-in Sanitary Sewer Collector to 24-in Trunk	$152,100
T3 - River Terrace West (Lower) - 10-in Sanitary Sewer Collector to River Terrace West (Lower) Pump Station	$441,160
T5 - River Terrace South - 10-in Sanitary Sewer Collector to Sanitary Sewer Collector along Beef Bend Road	$265,420
T6 - River Terrace South - 10-in and 12-in Sanitary Sewer Collector along Beef Bend Road to Roy Rogers Road	$792,640
Oregon Corporate Activity Tax	$45,000
Subtotal	**$1,696,320**
Total	**$5,876,000**

Water

The City of Tigard is the service provider for water in River Terrace and is expected to fund and build project Reservoir 19, as it is a large project that will serve River Terrace 2.0 and other areas. This project is in the City's 2020 Water System Master Plan and the City is best positioned to collect fees from the multiple service areas to fund it. Funds for this project are expected to come from a combination of water utility fees and water SDCs. A conceptual split - with 30 percent of funds coming from utility fees and 70 percent of funds coming from water SDCs is anticipated based on the cost split shown in the River Terrace 1.0 funding strategy. For the remaining water infrastructure projects identified for River Terrace 2.0, the Funding Strategy assumes they will be paid for and built by developers as development occurs; in some cases developers will be eligible for SDC credits for oversize costs. One variation may be project P2, which is a 16-inch water line be constructed largely within existing roadways, including the Roy Rogers and Schools Ferry (arterial) rights of way. For this project, it may make sense for the City to construct this improvement and create either a reimbursement district or City water meter fee surcharge to recoup the cost.

Potential Phases of Development

Development in River Terrace 2.0 will most likely occur in phases; the timing of those phases will be dependent on many factors including overall economic and market conditions, property owner readiness, construction costs and City priorities, among others. As an indicator of potential phasing, this plan evaluates development "readiness" based on physical factors that may make development more or less challenging (and therefore, more or less expensive) to implement.

In River Terrace 2.0, readiness indicators are primarily focused on the extension of public water, sanitary sewer and transportation infrastructure to serve new development.

Figures 22 and 23 show the varying levels of readiness for River Terrace West and South, on a scale of 1 to 4. Generally, a readiness level of 1 means that area is essentially ready for development now; public infrastructure is available and could easily be extended to serve new development there. A level of 4 means that significant and potentially challenging infrastructure improvements are needed before development can occur in that area.

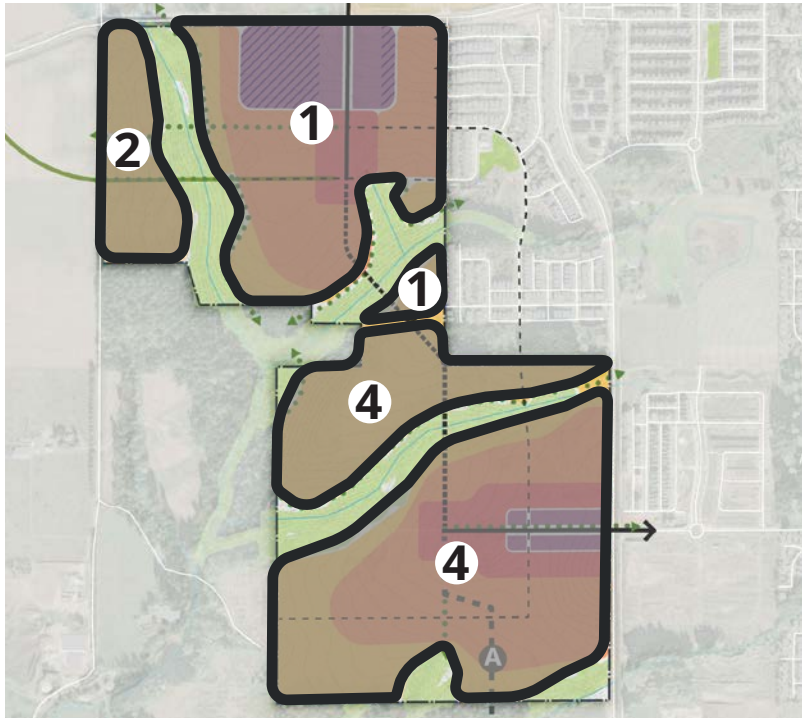


Figure 22 - River Terrace West Readiness

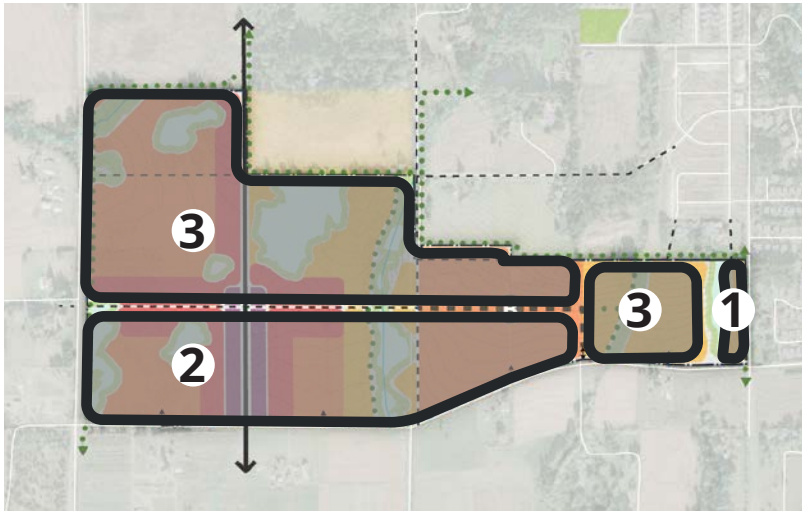


Figure 23 - River Terrace South Readiness

River Terrace West Readiness Assumptions

Upper Tier 1: Most of this subarea can be served by the existing sanitary sewer pump station located in the existing River Terrace East development. Water for most this area will be provided from an extension of existing service in SW Scholls Ferry Road.

Upper Tier 2: Sanitary sewer will flow north to an existing main in SW Scholls Ferry Road. The extent of developable land will be determined by topographic constraints. There will likely be some challenges to providing sewer service toward the southern edge of this subarea. Water service to this area is available via extension of service from SW Scholls Ferry Road.

Middle Tier 1: This small subarea adjacent to existing River Terrace development could be served with infrastructure by linking back to existing development to the east, connecting to the existing pump station in River Terrace. Water service will be provided from an extension of future service in Roy Rogers Road.

Lower Tier 4: Extending Sanitary sewer and water system infrastructure to this area is challenging. The lower portions could require one or more pump stations to pump back uphill to an existing force main in Roy Rogers Road, or a costly extension across a drainage that separates the two portions of this subarea. Water service will be provided from an extension of future service in Roy Rogers Road.

River Terrace South Readiness Assumptions

Tier 1: This area is a relatively narrow sliver of land on the eastern edge of River Terrace South that could be served by existing sanitary sewer in W 150th Ave. Water connections will be to an existing facility in Bull Mountain Road.

Tier 2: This area extends north of Beef Bend Road to an east-west line roughly parallel with SW Lasich Lane. It extends from SW Roy Rogers Road eastward to a point where topographic constraints make sewer service connection back to Beef Bend Road costly, requiring deep lines or a separate pump station. This area will gravity flow to a future line in Beef Bend Road, then west to Roy Rogers Road and south to the existing River Terrace South pump station. Proximity to Roy Rogers Road and the existing pump station will have an impact on the cost of extending services to parcels north and east. Water will be provided by new system extensions in Beef Bend Road and the future extension of River Terrace Boulevard from the north.

Tier 3: Two subareas are labeled as Tier 3, the areas north and east of Tier 2. The eastern portion is topographically constrained and will require deep lines or separate pump stations to reach Beef Bend Road. The northern portion of Tier 3 will gravity flow to Beef Bend. For both areas, the availability of water will depend on future development in Beef Bend and Roy Rogers Roads.

Housing Policy and Actions

Key messages from the 2021 Housing Needs Analysis highlight the need for:

- **Increased capacity** to accommodate projected growth
- **Affordable options** in all neighborhoods
- A **diverse housing mix** to meet resident needs on price and preference
- **Proactive approaches** by the City to achieve housing goals

As highlighted throughout this document, housing is a foundational element of the River Terrace 2.0 Concept Plan; it is the primary reason this work is being done. Planning for a new neighborhood that integrates a broad range of housing choices and offers affordable options for all household incomes requires special implementation considerations. The housing chapter (Chapter III) of this Concept Plan includes strategies for accommodating affordable housing throughout the River Terrace 2.0 neighborhood. This section highlights additional strategies that will support the housing objectives inherent to this work. These strategies are taken largely from the 2021 Housing Needs Analysis (HNA) that was prepared for Tigard by Mosaic Community Planning.

Strategies Tigard can explore to better encourage middle housing development, including affordable middle housing development, include:

- **Revise System Development Charge (SDC) Structure.** Tigard could revise its SDC structure to reflect different costs for different unit types and sizes, thereby reducing charges for smaller home types. Under the revised structure, SDCs would vary by square footage, with larger homes having higher SDCs.
- **Develop a City-Supported Loan Program for Small Housing Types.** Using construction excise tax (CET) funds, affordable housing bonds, or other funding, the City could fund a revolving short-term construction or bridge loan fund for small developers building affordable or market-rate middle housing who are not otherwise able to access more conventional forms of financing.
- **Market Middle Housing Opportunity to Small Housing Developers.** Similar to the recommendation related to outreach to LIHTC developers, Tigard could develop relationships with affordable and market-rate developers with a history of successful middle housing development in metro Portland. The City could develop a packet of information about available development assistance (SDC waivers, loan programs, etc.) and vision for middle housing in the city, including prime areas like River Terrace 2.0, the Washington Square Regional Center, or the city's urban renewal districts.

- **Incentivize Attached or Detached ADU Development on Existing Single-Family Home Lots.** Tigard could consider extending the SDC exemption for accessory dwelling units of 1,000 square feet or less past its sunset date or making the exemption permanent as the City of Portland did in 2018. Tigard could also collaborate with local nonprofits such as Craft3 to provide affordable loans to homeowners interested in adding an ADU to existing single-family home lots. Craft3's loan programs offer interest rates that vary by household income, with the lowest rates for homeowners who agree to rent their ADU at an affordable rate to households with incomes less than 80% of the area median.

The 2021 HNA also recommends implementing amendments for the Tigard Comprehensive Plan that will serve to support the housing concepts established in this Concept Plan. Those amendments include the following policy language:

- The City shall continue to develop, dedicate, and administer funding resources (such as the Construction Excise Tax and others) to support affordable housing for rental and homeownership, including new construction and preservation of existing affordable housing.
- The City shall provide opportunity for a mix and range of housing types and sizes in all low- and medium-density residential areas, including single detached houses, accessory dwelling units, quads, cottage clusters, courtyard units, and rowhouses.
- The City shall enact policies that provide for equitable housing opportunity without discrimination or disparity based on tenure, familial status, or household composition of the occupants of any type of housing.
- The City shall encourage the development of mixed-income neighborhoods and ensure opportunity for economic mobility and intergenerational wealth through affordable homeownership programs.

More Planning to Come

Once the River Terrace 2.0 Concept Plan is adopted and approved by Metro, the urban reserves will be brought into the UGB and additional planning can occur. In the next phase, the City will prepare a community plan for River Terrace 2.0 that will build from, and refine, the work done as part of this Concept Plan. Similar to the concept planning phase, the community plan will engage a broad and inclusive group of stakeholders and residents to prepare a more detailed guide for future development in this area.

The community plan will:

- Create a neighborhood master plan that is informed by the work in the concept plan
- Further refine housing strategies, including affordable housing strategies
- Explore zoning concepts, particularly for housing provision and design
- Conduct additional transportation analyses and identify street alignments and cross sections
- Refine project lists for public improvements and funding approaches
- Determine details for parks and trails (size, type and locations)

Once a community plan is developed and adopted by the City, annexation can occur and zoning can be applied to land within River Terrace 2.0. Ultimately, development will occur through land divisions, planned unit developments and site design review.

VIII. APPENDICES